

MEMORANDUM

DATE August 6, 2019

JOB NO. 2017-0069

TO Conservation Commission
Town of Arlington
730 Mass Ave. Annex
Arlington, MA 02476

FROM Joseph Famely
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Reeds Brook Sediment and Surface Water Assessment

Woods Hole Group was contracted to sample the sediments and surface waters at Reeds Brook, and evaluate the results of chemical analyses in the context of ecological risk. This technical memorandum summarizes the sampling activities, relevant site observations, and the results of comparisons of Site concentrations of metals in sediments and surface waters to relevant screening benchmarks and criteria. This technical memorandum does not constitute a risk assessment, but does provide information that would be relevant to a MCP Stage I Environmental Risk Characterization (ERC).

Woods Hole Group collected Spring (5/30/18) and Fall (12/4/18) surface water samples to characterize metals contamination and seasonal variability in Reeds Brook Site and upstream surface water. Woods Hole Group also collected sediment samples (12/4/18) in Reeds Brook Site and upstream locations to assess metals contamination. During the sediment sampling event, Woods Hole Group made observations of the nature and extent of iron flocculation.

A. Flocculation Summary

As detailed in the “Reeds Brook Fall 2018 Sediment Observations” technical memorandum (dated 12/18/18), iron flocculation and diffuse sediment grain staining are present in some areas of Reeds Brook at the Site, but are not present in any upstream areas. The iron flocculation occurring on Reeds Brook Site sediments appeared to be loose, surficial in nature, and transient. Observed on sediments in the eastern and western reaches of Reeds Brook (but not in the central portion), the floc was predominantly a loose dull orange organic floc that had settled in and among the organic debris and vegetation in the streambed and detention pond. The loose floc was easily disturbed and likely flushes out of Reeds Brook periodically with larger rain events. Additionally, an abundant and diverse biological community was observed inhabiting the Reeds Brook sediments, utilizing the Reeds Brook detention basins, and foraging at the Site. Based on this evidence, Woods Hole Group concluded that the observed iron flocculation at Reeds Brook does not constitute a condition of readily apparent harm.



Figure 1: Presence/Absence of Iron Flocculent in Reeds Brook and Upstream Wetland.

B. Sediment and Surface Water Sampling

Surface water sampling occurred on May 30, 2018 and December 4, 2018; sediment sampling occurred on December 4, 2018. Sample collection and analysis methods are detailed in the Sampling and Analysis Plan (original dated 12/4/17, addendum dated 10/29/18). Surface water samples were collected by hand dipping clean unpreserved sample bottles unless water quality parameters indicated a stratification in the water column (which occurred in the middle of Reeds Brook (MP-RB-SW-08) during the December sampling event. When water was stratified, a second sample was collected from approximately the middle of the lower layer using a Kemmerer sampling device. Sediment samples were collected using a petite ponar or an Ekman on a stick. Surface water samples were analyzed by Alpha Analytical for dissolved metals (RCRA 8 plus copper, iron, manganese, and zinc), and hardness was calculated from dissolved calcium and magnesium. Sediment samples were analyzed by Alpha Analytical for total metals (RCRA 8 plus copper, iron, manganese, and zinc), grain size, and total organic carbon.



Figure 2: Sediment and Surface Water Sampling Locations.

C. Sediment Results

Sediments from Reeds Brook were generally mixtures of silt and sand with total organic carbon ranging from 3% to 10%. Stations RB-03, RB-06, and RB-08 had proportionally more fines, while station RB-05 in the detention basin had coarser material. Sediments from the Upstream Wetland were predominantly sand with some silt and much higher total organic carbon (32%), likely due to decomposing wetland vegetation and leaf litter.

Station RB-08 in the center of Reeds Brook exhibited maximum concentrations for Reeds Brook stations for almost all metals measured. Detected concentrations of metals in Reeds Brook exceeded MADEP Freshwater Sediment Screening Benchmarks for arsenic (RB-08), lead (RB-04, RB-05, RB-06, RB-07, and RB-08), and zinc (RB-07). Due to high moisture content and low percent solids, the sample-specific reporting limits exceeded the screening benchmark for mercury at all Reeds Brook stations. Based on prior sampling in Reeds Brook (Brown & Caldwell, 2017) we do not expect mercury to be an issue for Reeds Brook sediments, however this does present an uncertainty for the present evaluation.

Detected concentrations of metals in the Upstream Wetland exceeded MADEP Freshwater Sediment Screening Benchmarks for copper, lead, mercury, and zinc. Metals concentrations in the Upstream Wetland were generally



consistent with or higher than concentrations in Reeds Brook. Concentrations detected in the Upstream Wetland were higher than Reeds Brook for barium, cadmium, copper, lead, mercury, and zinc.

Table 1. Sediment Analytical Results and Comparison to MADEP Screening Benchmarks.

Analyte	Units	MADEP Screening Benchmark	REEDS BROOK DETENTION BASINS								UPSTREAM WETLAND							
			MP-RB-SED-03 120418		MP-RB-SED-04 120418		MP-RB-SED-05 120418		MP-RB-SED-06 120418		MP-RB-SED-07 120418							
			Result	Result	Result	Result	Result	Result	Result	Result	Result	Result						
Arsenic, Total	mg/kg	33	17.2	J	11.7	J	20.3	J	18.6	J	15.7	J	25.3	J	41.5	J	6.28	J
Barium, Total	mg/kg	NA	121	J	62.2	J	136	J	142	J	78	J	121	J	228	J	345	J
Cadmium, Total	mg/kg	5	1.206	J	0.7952	UJ	0.9752	J	1.131	J	1.237	J	0.9519	UJ	2.05	J	3.802	J
Chromium, Total	mg/kg	110	66.7	J	26.2	J	56.5	J	69.2	J	32.5	J	51.3	J	89.9	J	23.3	J
Copper, Total	mg/kg	150	72.3	J	39.9	J	85.9	J	74.5	J	48	J	74.1	J	101	J	235	J
Iron, Total	mg/kg	NA	60100	J	31000	J	46100	J	64200	J	37800	J	57800	J	212000	J	72800	J
Lead, Total	mg/kg	130	111	J	159	J	320	J	146	J	114	J	163	J	171	J	472	J
Manganese, Total	mg/kg	NA	356	J	378	J	454	J	422	J	392	J	671	J	807	J	186	J
Mercury, Total	mg/kg	0.18	0.26	UJ	0.262	UJ	0.307	UJ	0.345	UJ	0.289	UJ	0.32	UJ	0.38	UJ	0.681	UJ
Selenium, Total	mg/kg	NA	7.97	UJ	7.95	UJ	9.39	UJ	10.2	UJ	8.7	UJ	9.52	UJ	11.2	UJ	19	UJ
Silver, Total	mg/kg	NA	1.99	UJ	1.99	UJ	2.35	UJ	2.56	UJ	2.18	UJ	2.38	UJ	2.79	UJ	4.75	UJ
Zinc, Total	mg/kg	460	358	J	185	J	305	J	356	J	484	J	264	J	431	J	785	J
% Clay Fine	%	-	8.3		4.3		7.3		8.4		3.3		3.4		17.1		8.3	
% Silt Fine	%	-	32.6		11.2		15.6		31.4		9.3		16.1		35.6		5.6	
% Fine Sand	%	-	32.8		51.1		23.7		34.2		28.7		32.1		13.4		26.1	
% Medium Sand	%	-	20.8		28		22.3		21.6		38.2		29.4		28.9		42.4	
% Coarse Sand	%	-	4.8		4.5		11.9		4.1		18.9		12.2		5		14.3	
% Fine Gravel	%	-	0.7		0.9		19.2		0.3		1.6		6.8		0.1	U	3.3	
% Coarse Gravel	%	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
% Cobbles	%	-	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
% Total Fines	%	-	40.9		15.5		22.9		39.8		12.6		19.5		52.7		13.9	
% Total Sand	%	-	58.4		83.6		57.9		59.9		85.8		73.7		47.3		82.8	
% Total Gravel	%	-	0.7		0.9		19.2		0.3		1.6		6.8		0.1	U	3.3	
Total Organic Carbon (Rep1)	%	-	11.8		3.47		4.27		6.26		4.75		3.78		10.3		31.8	
Total Organic Carbon (Rep2)	%	-	11.2		4.24		5.56		7.82		4.83		4.29		10.1		31.9	
Solids, Total	%	-	24.5		24		20.8		18.5		22.1		19.6		16.7		9.97	

D. Surface Water Results

Surface Water was collected from Reeds Brook and the Upstream Wetland in the Spring and Fall of 2018. An additional upstream area of Reeds Brook behind Dothan Street was sampled in the Spring only. Cadmium, lead, mercury, selenium, and silver were not detected in any surface water samples at Reeds Brook. Concentrations of dissolved iron, manganese, and zinc were highest at station proximate to (or in) stormwater outfalls (RB-03 and RB-06). Concentrations of other detected dissolved metals were generally consistent across stations and sampling events. Overall, surface water concentrations of dissolved metals were higher during the Spring sampling event than the late fall event. It was noted that the Fall sampling event occurred a few days after a rain event, so it is possible that surface water had been diluted by rain. In the deeper portion of Reeds Brook (RB-08), surface water was stratified and there was a bottom layer of high salinity (and slightly warmer) water exhibiting high metals concentrations. This high salinity layer may indicate a slug of recent stormwater input to Reeds Brook, assuming roads were pre-treated with salt ahead of a potential snow storm.

Iron exceeded the National Recommended Water Quality Criterion in all Reeds Brook samples except the May 2018 samples from RB-01, RB-02, and RB-04. No other exceedances of NRWQC occurred in Reeds Brook. There were also no exceedances of NRWQC in the Dothan Street upstream station at Reeds Brook.



The Upstream Wetland exhibited generally higher concentrations of dissolved metals than Reeds Brook. In fact, the highest concentration of iron measured (31.8 mg/L) was from the Spring sample at UW-01. Iron exceeded the NRWQC in all Upstream Wetland samples. Copper, lead, and zinc also exceeded the NRWQC in both Fall samples from the Upstream Wetland.

Table 2a. Surface Water Analytical Results and Comparison to NRWQC.

Analyte	Units	UPSTREAM DOTHAN		REEDS BROOK DETENTION BASINS									
		MP-DO-SW-01-053018		MP-RB-SW-01-053018		MP-RB-SW-01-D-053018		MP-RB-SW-01-120418		MP-RB-SW-02-MS/MSD-053018		MP-RB-SW-02-120418	
		Result	CCC	Result	CCC	Result	CCC	Result	CCC	Result	CCC	Result	CCC
Hardness	mg/L	84.2		145		150		109		148		98.8	
Arsenic	mg/L	0.0005	U	0.15	0.0005	0.15	0.0005	0.15	0.0005	U	0.15	0.0008	0.15
Barium	mg/L	0.0292		0.1016		0.1067		0.069		0.0977		0.0522	
Cadmium	mg/L	0.0005	U	0.00063	0.0005	U	0.0010	0.0005	U	0.0010	0.0005	U	0.0010
Chromium VI	mg/L	0.001	U	0.011	0.001	U	0.011	0.001	U	0.011	0.0012	U	0.011
Copper	mg/L	0.0015		0.0077	0.001	U	0.012	0.001	U	0.013	0.0024	0.0096	0.001
Iron	mg/L	0.341		1.0	0.285		1.0	0.235		1.0	1.8	1.0	0.184
Lead	mg/L	0.001	U	0.0021	0.001	U	0.0038	0.001	U	0.0039	0.001	U	0.0028
Manganese	mg/L	0.1036		0.2529		0.2547		0.1872		0.2485		0.1407	
Mercury	mg/L	0.0002	U	0.00077	0.0002	U	0.00077	0.0002	U	0.00077	0.0002	U	0.00077
Selenium	mg/L	0.005	U	0.0046	0.005	U	0.0046	0.005	U	0.0046	0.005	U	0.0046
Silver	mg/L	0.0005	U		0.0005	U		0.0005	U		0.0005	U	
Zinc	mg/L	0.0121		0.10	0.01	U	0.16	0.01	U	0.17	0.0172	U	0.13

Table 2b. Surface Water Analytical Results and Comparison to NRWQC (continued).

Analyte	Units	REEDS BROOK DETENTION BASINS											
		MP-RB-SW-03-053018		MP-RB-SW-03-120418		MP-RB-SW-04-053018		MP-RB-SW-04-120418		MP-RB-SW-05-053018		MP-RB-SW-05-120418	
		Result	CCC	Result	CCC	Result	CCC	Result	CCC	Result	CCC	Result	CCC
Hardness	mg/L	191		81.6		144		91		111		88.2	
Arsenic	mg/L	0.0006		0.15	0.0005	U	0.15	0.0006		0.15	0.0016	0.15	0.0005
Barium	mg/L	0.1472		0.0508		0.1026		0.0519		0.0787		0.046	
Cadmium	mg/L	0.0005	U	0.0012	0.0005	U	0.0006	0.0005	U	0.00090	0.0005	U	0.00080
Chromium VI	mg/L	0.001	U	0.011	0.0021	0.011	0.001	U	0.011	0.0017	0.011	0.001	U
Copper	mg/L	0.001	U	0.016	0.002	0.0075	0.001	U	0.012	0.0021	0.0083	0.001	U
Iron	mg/L	7.1		1.0	2	1.0	0.196	1.0	1.85	1.0	2.59	1.0	1.72
Lead	mg/L	0.001	U	0.0051	0.001	U	0.0020	0.001	U	0.0037	0.001	U	0.0028
Manganese	mg/L	0.4564		0.0977		0.2583		0.121		0.2408		0.1073	
Mercury	mg/L	0.0002	U	0.00077	0.0002	U	0.00077	0.0002	U	0.00077	0.0002	U	0.00077
Selenium	mg/L	0.005	U	0.0046	0.005	U	0.0046	0.005	U	0.0046	0.005	U	0.0046
Silver	mg/L	0.0005	U		0.0005	U		0.0005	U		0.0005	U	
Zinc	mg/L	0.188		0.20	0.0247	0.099	0.01	U	0.16	0.0206	U	0.11	0.01



Table 2c. Surface Water Analytical Results and Comparison to NRWQC (continued).

Analyte	Units	REEDS BROOK DETENTION BASINS											
		MP-RB-SW-06-053018		MP-RB-SW-06-120418		MP-RB-SW-07-120418		MP-RB-SW-07FD-120418		MP-RB-SW-08-120418		MP-RB-SW-08L-120418	
		Result	CCC	Result	CCC	Result	CCC	Result	CCC	Result	CCC	Result	CCC
Hardness	mg/L	129		97.2		95.2		95		91.9		132	
Arsenic	mg/L	0.0005	U	0.15	0.0005	U	0.15	0.0005	U	0.15	0.0005	U	0.15
Barium	mg/L	0.0889		0.0554		0.0548		0.0536		0.0518		0.0844	
Cadmium	mg/L	0.0005	U	0.0009	0.0005	U	0.00070	0.0005	U	0.0007	0.0005	U	0.0007
Chromium VI	mg/L	0.001	U	0.011	0.0026		0.011	0.0017		0.011	0.0015		0.011
Copper	mg/L	0.0011		0.011	0.0021		0.0087	0.002		0.0086	0.0018		0.0083
Iron	mg/L	8.07		1.0	4.63		1.0	2		1.0	1.79		1.0
Lead	mg/L	0.001	U	0.0033	0.001	U	0.0024	0.001	U	0.0024	0.001	U	0.0023
Manganese	mg/L	0.1298			0.1044			0.1374			0.1351		0.1174
Mercury	mg/L	0.0002	U	0.00077	0.0002	U	0.00077	0.0002	U	0.00077	0.0002	U	0.00077
Selenium	mg/L	0.005	U	0.0046	0.005	U	0.0046	0.005	U	0.0046	0.005	U	0.0046
Silver	mg/L	0.0005	U		0.0005	U		0.0005	U		0.0005	U	0.0005
Zinc	mg/L	0.0131		0.15	0.0205	U	0.12	0.0182	U	0.11	0.0185	U	0.11
													0.0563
													0.15

Table 2d. Surface Water Analytical Results and Comparison to NRWQC (continued).

Analyte	Units	UPSTREAM WETLAND					
		MP-UW-SW-01-053018		MP-UW-SW-01-120418		MP-UW-SW-02-120418	
		Result	CCC	Result	CCC	Result	CCC
Hardness	mg/L	200		62.4		116	
Arsenic	mg/L	0.0005	U	0.15	0.0005	U	0.15
Barium	mg/L	0.2876		0.0941		0.1278	
Cadmium	mg/L	0.0005	U	0.0012	0.0005	U	0.00050
Chromium VI	mg/L	0.001	U	0.011	0.001	U	0.011
Copper	mg/L	0.0014		0.016	0.0074		0.0060
Iron	mg/L	31.8		1.0	1.91		1.0
Lead	mg/L	0.001	U	0.0053	0.0018		0.0015
Manganese	mg/L	0.4908			0.1946		0.4381
Mercury	mg/L	0.0002	U	0.00077	0.0002	U	0.00077
Selenium	mg/L	0.005	U	0.0046	0.005	U	0.0046
Silver	mg/L	0.0005	U		0.0005	U	
Zinc	mg/L	0.01	U	0.21	0.0948		0.079
							0.3141
							0.13

**Table 3.** Water Quality Parameters.

Station	Date	Time	°C	mmHg	DO %	DO mg/L	SPC-uS/cm	pH	ORP mV	NTU	DEP m
MP-DO-SW-01-053018	5/30/2018	12:02:44 PM	15.4	761.7	56.1	5.6	808	6.8	-7.1	0.6	~0.3
MP-RB-SW-01-053018	5/30/2018	12:51:23 PM	24.6	761.9	76.7	6.36	1619	6.78	-15.9	14.2	~0.3
MP-RB-SW-02-MS/MD-053018	5/30/2018	1:18:22 PM	24.3	761.8	95	7.92	1620	6.75	-6.2	26.7	~0.3
MP-RB-SW-02-MS/MD-053018	5/30/2018	1:18:25 PM	24.3	761.8	95.3	7.94	1619	6.75	-6.2	26	~0.3
MP-RB-SW-02-MS/MD-053018	5/30/2018	1:18:26 PM	24.3	761.8	95.4	7.94	1618	6.75	-6.2	25.9	~0.3
MP-RB-SW-03-053018	5/30/2018	2:12:35 PM	13.4	761.5	13	1.35	1538	6.33	-49.6	24.4	~0.3
MP-RB-SW-03-053018	5/30/2018	2:12:35 PM	13.4	761.5	13	1.35	1537	6.33	-49.5	24.5	~0.3
MP-RB-SW-03-053018	5/30/2018	2:12:35 PM	13.4	761.5	12.9	1.35	1537	6.33	-49.5	24.6	~0.3
MP-RB-SW-04-053018	5/30/2018	2:36:23 PM	24.7	761.3	90.2	7.46	1631	6.79	-10.5	19.6	~0.3
MP-RB-SW-05-053018	5/30/2018	2:51:47 PM	29.3	761.2	31.7	2.42	1088	6.9	5.7	71.4	~0.3
MP-RB-SW-06-053018	5/30/2018	3:09:04 PM	13.5	761.2	64.1	6.66	1183	6.56	-49.1	1.2	~0.3
MP-UW-SW-01-053018	5/30/2018	3:57:28 PM	16.8	760.7	2.5	0.24	1937	6.75	-157.4	141	~0.3
MP-RB-SW-01-120418	12/4/2018	9:08:00 AM	6.49	751.2	60.8	7.45	1136	7.43	58.8	-11.2	0.274
MP-RB-SW-02-120419	12/4/2018	9:19:00 AM	5.32	750.9	78.9	9.97	877	7.46	-310.6	-11.1	0.284
MP-RB-SW-03-120419	12/4/2018	9:35:00 AM	7.7	750.9	84.9	10.1	804	7.22	-230.9	3.2	0.28
MP-RB-SW-04-120419	12/4/2018	10:08:00 AM	5.03	751.1	74.6	9.5	817	6.96	-191.6	-13	0.267
MP-RB-SW-05-120419	12/4/2018	10:18:00 AM	5.03	731.6	79.3	10.09	686	6.94	-213.4	-1.9	0.296
MP-RB-SW-06-120419	12/4/2018	10:30:00 AM	7.41	751.2	101.6	12.18	756	6.93	-189.7	-18	0.294
MP-RB-SW-07-120419	12/4/2018	9:53:00 AM	5.36	750.9	91.9	11.6	819	7.12	-236.7	-13.4	0.261
MP-RB-SW-08-120419	12/4/2018	10:42:00 AM	5.58	751.2	84.8	10.64	823	7.08	-172.3	-14.1	0.473
MP-RB-SW-08L-120419	12/4/2018	10:48:00 AM	9.17	751.3	35.2	3.84	14030	7.08	-223.1	-13.2	1.174
MP-UW-SW-01-120418	12/4/2018	11:49:00 AM	4.15	751.1	47.1	6.13	905	7.29	-368.6	-16.6	0.276
MP-UW-SW-02-120419	12/4/2018	12:03:00 PM	4.7	751.1	35.5	4.55	785	6.87	-345.5	-16.1	0.26

E. Summary of 2018 Fieldwork Investigation

Woods Hole Group sampled surface water and sediments from Reeds Brook detention basins and upstream locations. Analysis of metals in these media at the Site returned NRWQC exceedances for iron, and exceedances of MADEP sediment benchmarks for arsenic, lead, and zinc. Given the patterns on contamination, two potential contributing sources emerged: (1) the stormwater drainage and outfall system, and (2) the upstream wetland. Groundwater results from the landfill side of Reeds Brook and the Upstream Wetland would contribute to a better understanding of these results may help determine whether the original source of contamination in Reeds Brook and the Upstream Wetland is the former landfill or urban stormwater runoff and deteriorating/unmaintained infrastructure. If it is determined that stormwater and stormwater infrastructure is contributing to Reeds Brook contamination, a crucial step in controlling this source will be to implement the relevant Best Management Practices (BMPs) outlined in the Town of Arlington's 2004 Stormwater Management Program.

Attachments:*Spring Surface Water Laboratory Report**Late Fall Surface Water and Sediment Laboratory Report*



ANALYTICAL REPORT

Lab Number:	L1819964
Client:	Woods Hole Group 81 Technology Park Drive East Falmouth, MA 02536
ATTN:	Joseph Famely
Phone:	(508) 495-6220
Project Name:	McCLENNEN PARK
Project Number:	Not Specified
Report Date:	06/12/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LA00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

Eight Walkup Drive, Westborough, MA 01581-1019
 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1819964-01	MP-DO-SW-01-053018	WATER	ARLINGTON, MA	05/30/18 11:55	05/31/18
L1819964-02	MP-RB-SW-01-053018	WATER	ARLINGTON, MA	05/30/18 12:54	05/31/18
L1819964-03	MP-RB-SW-01-D-053018	WATER	ARLINGTON, MA	05/30/18 12:56	05/31/18
L1819964-04	MP-RB-SW-02-MS/MSD-053018	WATER	ARLINGTON, MA	05/30/18 13:20	05/31/18
L1819964-05	MP-RB-SW-03-053018	WATER	ARLINGTON, MA	05/30/18 14:15	05/31/18
L1819964-06	MP-RB-SW-04-053018	WATER	ARLINGTON, MA	05/30/18 14:40	05/31/18
L1819964-07	MP-RB-SW-05-053018	WATER	ARLINGTON, MA	05/30/18 14:55	05/31/18
L1819964-08	MP-RB-SW-06-053018	WATER	ARLINGTON, MA	05/30/18 15:15	05/31/18
L1819964-09	MP-UW-SW-01-053018	WATER	ARLINGTON, MA	05/30/18 16:00	05/31/18

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Case Narrative (continued)

MCP Related Narratives

Dissolved Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 06/12/18

METALS

Project Name: MCCLENNEN PARK

Project Number: Not Specified

Lab Number: L1819964

Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-01
 Client ID: MP-DO-SW-01-053018
 Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 11:55
 Date Received: 05/31/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.0292		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Copper, Dissolved	0.0015		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Iron, Dissolved	0.341		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.1036		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:19	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Zinc, Dissolved	0.0121		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:13	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	84.2		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 21:26	EPA 3005A	1,6010C	AB



Project Name: MCCLENNEN PARK

Project Number: Not Specified

Lab Number: L1819964

Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-02
 Client ID: MP-RB-SW-01-053018
 Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 12:54
 Date Received: 05/31/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.0005		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.1016		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Copper, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Iron, Dissolved	0.285		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.2529		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:21	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Zinc, Dissolved	ND		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:18	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	145		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 21:31	EPA 3005A	1,6010C	AB

Project Name: MCCLENNEN PARK

Project Number: Not Specified

Lab Number: L1819964

Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-03
 Client ID: MP-RB-SW-01-D-053018
 Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 12:56
 Date Received: 05/31/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.0005		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.1067		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Copper, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Iron, Dissolved	0.235		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.2547		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:23	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Zinc, Dissolved	ND		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:22	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	150		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 21:35	EPA 3005A	1,6010C	AB



Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-04
Client ID: MP-RB-SW-02-MS/MSD-053018
Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 13:20
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.0008		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.0977		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Copper, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Iron, Dissolved	0.184		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.2485		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:14	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Zinc, Dissolved	ND		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 14:44	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	148		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 21:07	EPA 3005A	1,6010C	AB



Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-05
Client ID: MP-RB-SW-03-053018
Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 14:15
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.0006		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.1472		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Copper, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Iron, Dissolved	7.10		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.4564		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:25	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Zinc, Dissolved	0.1880		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:26	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	191		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 21:54	EPA 3005A	1,6010C	AB



Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-06
Client ID: MP-RB-SW-04-053018
Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 14:40
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.0006		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.1026		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Copper, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Iron, Dissolved	0.196		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.2583		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:27	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Zinc, Dissolved	ND		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:30	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	144		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 21:59	EPA 3005A	1,6010C	AB

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-07
Client ID: MP-RB-SW-05-053018
Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 14:55
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.0016		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.0787		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Copper, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Iron, Dissolved	2.59		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.2408		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:28	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Zinc, Dissolved	ND		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:34	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	111		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 22:03	EPA 3005A	1,6010C	AB



Project Name: MCCLENNEN PARK

Project Number: Not Specified

Lab Number: L1819964

Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-08
 Client ID: MP-RB-SW-06-053018
 Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 15:15
 Date Received: 05/31/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.0889		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Copper, Dissolved	0.0011		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Iron, Dissolved	8.07		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.1298		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:30	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Zinc, Dissolved	0.0131		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:38	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	129		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 22:08	EPA 3005A	1,6010C	AB

Project Name: MCCLENNEN PARK

Project Number: Not Specified

Lab Number: L1819964

Report Date: 06/12/18

SAMPLE RESULTS

Lab ID: L1819964-09
 Client ID: MP-UW-SW-01-053018
 Sample Location: ARLINGTON, MA

Date Collected: 05/30/18 16:00
 Date Received: 05/31/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Barium, Dissolved	0.2876		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Chromium, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Copper, Dissolved	0.0014		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Iron, Dissolved	31.8		mg/l	0.050	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Manganese, Dissolved	0.4908		mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Mercury, Dissolved	ND		mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:36	EPA 7470A	97,7470A	EA
Selenium, Dissolved	ND		mg/l	0.005	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Silver, Dissolved	ND		mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Zinc, Dissolved	ND		mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 15:43	EPA 3005A	97,6020A	AM
Dissolved Hardness by SM 2340B - Mansfield Lab											
Hardness	200		mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 22:13	EPA 3005A	1,6010C	AB

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-09 Batch: WG1121634-1									
Arsenic, Dissolved	ND	mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Barium, Dissolved	ND	mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Cadmium, Dissolved	ND	mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Chromium, Dissolved	ND	mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Copper, Dissolved	ND	mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Iron, Dissolved	ND	mg/l	0.050	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Lead, Dissolved	ND	mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Manganese, Dissolved	ND	mg/l	0.0010	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Selenium, Dissolved	ND	mg/l	0.005	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Silver, Dissolved	ND	mg/l	0.0005	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM
Zinc, Dissolved	ND	mg/l	0.0100	--	1	06/01/18 16:05	06/04/18 14:19	97,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Hardness by SM 2340B - Mansfield Lab for sample(s): 01-09 Batch: WG1121635-1									
Hardness	ND	mg/l	0.660	NA	1	06/01/18 16:05	06/11/18 20:58	1,6010C	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-09 Batch: WG1121648-1									
Mercury, Dissolved	ND	mg/l	0.0002	--	1	06/01/18 16:46	06/04/18 18:04	97,7470A	EA

Prep Information

Digestion Method: EPA 7470A



Lab Control Sample Analysis

Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-09 Batch: WG1121634-2 WG1121634-3								
Arsenic, Dissolved	106		104		80-120	2		20
Barium, Dissolved	104		102		80-120	2		20
Cadmium, Dissolved	106		102		80-120	4		20
Chromium, Dissolved	107		104		80-120	3		20
Copper, Dissolved	109		106		80-120	3		20
Iron, Dissolved	113		111		80-120	2		20
Lead, Dissolved	116		114		80-120	2		20
Manganese, Dissolved	105		101		80-120	4		20
Selenium, Dissolved	105		101		80-120	4		20
Silver, Dissolved	101		99		80-120	2		20
Zinc, Dissolved	108		105		80-120	3		20

Dissolved Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-09 Batch: WG1121635-2								
Hardness	98		-		80-120	-		

MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-09 Batch: WG1121648-2 WG1121648-3								
Mercury, Dissolved	93		94		80-120	1		20

Matrix Spike Analysis
Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1121634-4 QC Sample: L1819964-04 Client ID: MP-RB-SW-02-MS/MSD-053018												
Arsenic, Dissolved	0.0008	0.12	0.1302	108	-	-	-	-	75-125	-	-	20
Barium, Dissolved	0.0977	2	2.142	102	-	-	-	-	75-125	-	-	20
Cadmium, Dissolved	ND	0.051	0.0530	104	-	-	-	-	75-125	-	-	20
Chromium, Dissolved	ND	0.2	0.2130	106	-	-	-	-	75-125	-	-	20
Copper, Dissolved	ND	0.25	0.2730	109	-	-	-	-	75-125	-	-	20
Iron, Dissolved	0.184	1	1.36	118	-	-	-	-	75-125	-	-	20
Lead, Dissolved	ND	0.51	0.5912	116	-	-	-	-	75-125	-	-	20
Manganese, Dissolved	0.2485	0.5	0.7770	106	-	-	-	-	75-125	-	-	20
Selenium, Dissolved	ND	0.12	0.121	101	-	-	-	-	75-125	-	-	20
Silver, Dissolved	ND	0.05	0.0492	98	-	-	-	-	75-125	-	-	20
Zinc, Dissolved	ND	0.5	0.5718	114	-	-	-	-	75-125	-	-	20
Dissolved Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1121635-3 QC Sample: L1819964-04 Client ID: MP-RB-SW-02-MS/MSD-053018												
Hardness	148	66.2	207	89	-	-	-	-	75-125	-	-	20
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1121648-4 QC Sample: L1819964-04 Client ID: MP-RB-SW-02-MS/MSD-053018												
Mercury, Dissolved	ND	0.005	0.0044	89	-	-	-	-	75-125	-	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1121634-5 QC Sample: L1819964-04 Client ID: MP-RB-SW-02-MS/MSD-053018						
Arsenic, Dissolved	0.0008	0.0007	mg/l	11		20
Barium, Dissolved	0.0977	0.1037	mg/l	6		20
Cadmium, Dissolved	ND	ND	mg/l	NC		20
Chromium, Dissolved	ND	ND	mg/l	NC		20
Copper, Dissolved	ND	ND	mg/l	NC		20
Iron, Dissolved	0.184	0.194	mg/l	5		20
Lead, Dissolved	ND	ND	mg/l	NC		20
Manganese, Dissolved	0.2485	0.2560	mg/l	3		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silver, Dissolved	ND	ND	mg/l	NC		20
Zinc, Dissolved	ND	ND	mg/l	NC		20
Dissolved Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1121635-4 QC Sample: L1819964-04 Client ID: MP-RB-SW-02-MS/MSD-053018						
Hardness	148	150	mg/l	1		20
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1121648-5 QC Sample: L1819964-04 Client ID: MP-RB-SW-02-MS/MSD-053018						
Mercury, Dissolved	ND	ND	mg/l	NC		20

Project Name: MCCLENNEN PARK
 Project Number: Not Specified

**Lab Serial Dilution
 Analysis
 Batch Quality Control**

Lab Number: L1819964
 Report Date: 06/12/18

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1121634-6 QC Sample: L1819964-04 Client ID: MP-RB-SW-02-MS/MSD-053018						
Barium, Dissolved	0.0977	0.0996	mg/l	2		10
Manganese, Dissolved	0.2485	0.2559	mg/l	3		10

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Serial_No:06121819:14
Lab Number: L1819964
Report Date: 06/12/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1819964-01A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-01X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-02A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-02X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-03A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-03X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-04A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-04A1	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-04A2	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1819964-04X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-04X1	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-04X2	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-05A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-05X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-06A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-06X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-07A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1819964-07X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDIS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-08A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-08X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDIS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1819964-09A	Plastic 250ml unpreserved	A	7	7	2.6	Y	Absent		-
L1819964-09X	Plastic 250ml HNO3 preserved Filtrates	A	NA		2.6	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),HARDIS(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)

*Values in parentheses indicate holding time in days

Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report



Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedances are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report



Project Name: MCCLENNEN PARK
Project Number: Not Specified

Lab Number: L1819964
Report Date: 06/12/18

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; **SCM:** Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; **SCM:** Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: **SCM:** Perchlorate

EPA 9010: NPW and **SCM:** Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; **SCM:** Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**
EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF

8 Walkup Drive
Westboro, MA 01581
Tel: 508-839-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-8300

Client Information

Client: WOODS HOLE GROUP

Address: 81 TECHNOLOGY PARK DR.
E. FALMOUTH, MA 02536

Phone: 508 - 495 - 6220

Email: jfamely@whgrp.com

Additional Project Information:

PER SUSAN CHAPNICK & LIZ PORTA:

RCRA 8 METALS, PLUS Cu, Fe, Mn, Zn

CALCULATE HARDNESS FROM DISSOLVED Ca & Mg

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials
		Date	Time		
19964-01	MP-DO-SW-01-053018	5/30/18	11:55	SW	BF
02	MP-RB-SW-01-053018	5/30/18	12:54	SW	BF
03	MP-RB-SW-01-D-053018	5/30/18	12:56	SW	BF
04	MP-RB-SW-02-MS/MD-053018	5/30/18	13:20	SW	BF
05	MP-RB-SW-03-053018	5/30/18	14:15	SW	BF
06	MP-RB-SW-04-053018	5/30/18	14:40	SW	BF
07	MP-RB-SW-05-053018	5/30/18	14:55	SW	BF
08	MP-RB-SW-06-053018	5/30/18	15:15	SW	BF
09	MP-UW-SW-01-053018	5/30/18	16:00	SW	BF

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO₃
D= H₂SO₄
E= NaOH
F= MeOH
G= NaHSO₄
H= Na₂SO₃
I= Ascorbic Acid
J= NH₄Cl
K= Zn Acetate
O= Other

Container Type

P

Preservative

A

Relinquished By:	Date/Time	Received By:	Date/Time
DRH	5/31/18 09:45	MCW	5/31/18 9:45

All samples submitted are subject to
Alpha's Terms and Conditions.
See reverse side.

FORM NO. 01-01 (rev. 12-Mar-2012)



ANALYTICAL REPORT

Lab Number:	L1849652
Client:	Woods Hole Group 107 Waterhouse Road Bourne, MA 02532
ATTN:	Joseph Famely
Phone:	(508) 495-6220
Project Name:	MCCLENNEN PARK
Project Number:	2017-0069
Report Date:	12/28/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LA00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1849652-01	MP-RB-SW-01-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 08:25	12/05/18
L1849652-02	MP-RB-SW-02-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 08:40	12/05/18
L1849652-03	MP-RB-SW-03-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 08:55	12/05/18
L1849652-04	MP-RB-SW-07-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 09:10	12/05/18
L1849652-05	MP-RB-SW-07FD-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 09:12	12/05/18
L1849652-06	MP-RB-SW-04-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 09:25	12/05/18
L1849652-07	MP-RB-SW-05-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 09:35	12/05/18
L1849652-08	MP-RB-SW-06-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 09:50	12/05/18
L1849652-09	MP-RB-UW-01-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 11:05	12/05/18
L1849652-10	MP-RB-UW-02-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 11:20	12/05/18
L1849652-11	MP-RB-SW-08-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 10:13	12/05/18
L1849652-12	MP-RB-SW-08L-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 10:18	12/05/18
L1849652-13	MP-SW-EB-120418	SURFACE WATER	ARLINGTON, MA	12/04/18 11:05	12/05/18
L1849652-14	MP-RB-SED-08-120418	SEDIMENT	ARLINGTON, MA	12/04/18 10:22	12/05/18
L1849652-15	MP-RB-SED-03-120418	SEDIMENT	ARLINGTON, MA	12/04/18 10:30	12/05/18
L1849652-16	MP-RB-SED-07-120418	SEDIMENT	ARLINGTON, MA	12/04/18 12:30	12/05/18
L1849652-17	MP-RB-SED-07FD-120418	SEDIMENT	ARLINGTON, MA	12/04/18 12:50	12/05/18
L1849652-18	MP-RB-SED-04-120418	SEDIMENT	ARLINGTON, MA	12/04/18 13:10	12/05/18
L1849652-19	MP-RB-SED-05-120418	SEDIMENT	ARLINGTON, MA	12/04/18 13:30	12/05/18
L1849652-20	MP-RB-SED-06-120418	SEDIMENT	ARLINGTON, MA	12/04/18 13:50	12/05/18
L1849652-21	MP-UW-SED-02-120418	SEDIMENT	ARLINGTON, MA	12/04/18 14:50	12/05/18

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

MCP Related Narratives

Total Metals

In reference to question H:

The WG1190565-3 MS recoveries, performed on L1849652-18, are outside the acceptance criteria for iron (2130%) and manganese (144%). Re-analysis of the MS yielded unacceptable recoveries for iron and manganese in the range of >125%. The LCS recoveries were within acceptance criteria for these analytes; therefore, no further action was taken.

The WG1190565-4 Laboratory Duplicate RPD for manganese (44%), performed on L1849652-18, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Total Mercury

In reference to question H:

The WG1188095-4 MS recovery, performed on L1849652-18, is outside the acceptance criteria for mercury (170%). Re-analysis of the MS yielded unacceptable recoveries for mercury in the range of 30-74% or >125%. The LCS recovery was within acceptance criteria for this analyte; therefore, no further action was taken.

Dissolved Metals

In reference to question H:

The WG1190316-3 MS recovery, performed on L1849652-06, is outside the acceptance criteria for iron (130%). Re-analysis of the MS yielded unacceptable recoveries for iron in the range of >125%. The LCS recovery was within acceptance criteria for this analyte; therefore, no further action was taken.

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Case Narrative (continued)

Non-MCP Related Narratives

Total Organic Carbon

The WG1188863-4 MS recovery for total organic carbon (rep2) (15%) performed on L1849652-18, is outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria indicating the sample batch was in control, and all sample results were accepted.

Grain Size Analysis

The WG1186360-1 Laboratory Duplicate RPDs for % fine gravel (62%), % total gravel (62%) and % silt fine (26%), performed on L1849652-18, are outside the acceptance criteria. The elevated RPDs have been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Susan O' Neil

Title: Technical Director/Representative

Date: 12/28/18

METALS

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-01
Client ID: MP-RB-SW-01-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 08:25
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	109		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 20:24	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0690	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0012	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0024	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Iron, Dissolved	1.80	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1872	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:17	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0172	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 16:53	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-02
Client ID: MP-RB-SW-02-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 08:40
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	98.8		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 20:42	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0522	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0015	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0022	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Iron, Dissolved	1.69	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1407	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:18	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0173	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 16:57	EPA 3005A	97,6020B	AM

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-03
Client ID: MP-RB-SW-03-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 08:55
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	81.6		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 20:47	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0508	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0021	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0020	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Iron, Dissolved	2.00	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.0977	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:31	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0247	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:01	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-04
Client ID: MP-RB-SW-07-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 09:10
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	95.2		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 20:51	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0548	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0017	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0020	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Iron, Dissolved	2.00	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1374	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:33	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0182	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:05	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-05
Client ID: MP-RB-SW-07FD-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 09:12
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	95.0		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 20:56	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0536	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0015	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0018	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Iron, Dissolved	1.79	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1351	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:35	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0185	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:10	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-06
Client ID: MP-RB-SW-04-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 09:25
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	91.0		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 21:00	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0519	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0017	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0021	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Iron, Dissolved	1.85	mg/l	0.050	0.050	1	12/17/18 18:02	12/19/18 13:19	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1210	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:50	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0206	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 16:49	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-07
Client ID: MP-RB-SW-05-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 09:35
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	88.2		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 21:32	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0460	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0016	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0019	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Iron, Dissolved	1.72	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1073	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:36	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0104	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:14	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-08
Client ID: MP-RB-SW-06-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 09:50
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	97.2		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 21:37	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0554	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0026	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0021	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Iron, Dissolved	4.63	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1044	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:38	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0205	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:18	EPA 3005A	97,6020B	AM

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-09
Client ID: MP-RB-UW-01-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 11:05
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	62.4		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 21:41	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0941	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Chromium, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0074	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Iron, Dissolved	1.91	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Lead, Dissolved	0.0018	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1946	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:40	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0948	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:22	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-10
Client ID: MP-RB-UW-02-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 11:20
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	116		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 21:46	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	0.0009	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.1278	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	0.0006	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0014	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0215	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Iron, Dissolved	2.10	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Lead, Dissolved	0.0068	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.4381	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:42	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.3141	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:39	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-11
Client ID: MP-RB-SW-08-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 10:13
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	91.9		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 21:51	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0518	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Chromium, Dissolved	0.0018	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0017	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Iron, Dissolved	1.91	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.1174	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:54	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0183	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:43	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-12
Client ID: MP-RB-SW-08L-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 10:18
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	132		mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 21:55	EPA 3005A	1,6010D	MC

MCP Dissolved Metals - Mansfield Lab

Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Barium, Dissolved	0.0844	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Chromium, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0011	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Iron, Dissolved	8.98	mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Manganese, Dissolved	0.4888	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:55	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0563	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:47	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-13 Date Collected: 12/04/18 11:05
 Client ID: MP-SW-EB-120418 Date Received: 12/05/18
 Sample Location: ARLINGTON, MA Field Prep: Not Specified

Sample Depth:

Matrix: Surface Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Barium, Dissolved	ND		mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Cadmium, Dissolved	ND		mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Chromium, Dissolved	ND		mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Copper, Dissolved	0.0011		mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Iron, Dissolved	0.071		mg/l	0.065	0.050	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Lead, Dissolved	ND		mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Manganese, Dissolved	ND		mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Mercury, Dissolved	ND		mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:57	EPA 7470A	97,7470A	MG
Selenium, Dissolved	ND		mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Silver, Dissolved	ND		mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM
Zinc, Dissolved	0.0212		mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 17:51	EPA 3005A	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-14
Client ID: MP-RB-SED-08-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 10:22
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Sediment
Percent Solids: 17%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	41.5		mg/kg	2.79	2.79	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Barium, Total	228		mg/kg	16.8	16.8	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Cadmium, Total	2.050		mg/kg	1.117	1.117	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Chromium, Total	89.9		mg/kg	11.2	11.2	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Copper, Total	101		mg/kg	11.2	11.2	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Iron, Total	212000		mg/kg	1120	1120	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Lead, Total	171		mg/kg	3.35	3.35	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Manganese, Total	807		mg/kg	11.2	11.2	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Mercury, Total	ND		mg/kg	0.380	0.380	1	12/19/18 09:10	12/21/18 18:42	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	11.2	11.2	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	2.79	2.79	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM
Zinc, Total	431		mg/kg	55.8	55.8	10	12/18/18 11:40	12/20/18 15:26	EPA 3050B	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-15 Date Collected: 12/04/18 10:30
Client ID: MP-RB-SED-03-120418 Date Received: 12/05/18
Sample Location: ARLINGTON, MA Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Percent Solids: 25%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	17.2		mg/kg	1.99	1.99	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Barium, Total	121		mg/kg	12.0	12.0	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Cadmium, Total	1.206		mg/kg	0.7972	0.7972	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Chromium, Total	66.7		mg/kg	7.97	7.97	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Copper, Total	72.3		mg/kg	7.97	7.97	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Iron, Total	60100		mg/kg	797	797.	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Lead, Total	111		mg/kg	2.39	2.39	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Manganese, Total	356		mg/kg	7.97	7.97	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Mercury, Total	ND		mg/kg	0.260	0.260	1	12/19/18 09:10	12/21/18 18:44	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	7.97	7.97	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	1.99	1.99	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM
Zinc, Total	358		mg/kg	39.8	39.8	10	12/18/18 11:40	12/20/18 15:30	EPA 3050B	97,6020B	AM

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-16 Date Collected: 12/04/18 12:30
Client ID: MP-RB-SED-07-120418 Date Received: 12/05/18
Sample Location: ARLINGTON, MA Field Prep: Not Specified

Sample Depth:

Matrix: Sediment
Percent Solids: 22%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	15.7		mg/kg	2.18	2.18	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Barium, Total	78.0		mg/kg	13.0	13.0	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Cadmium, Total	1.237		mg/kg	0.8702	0.8702	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Chromium, Total	32.5		mg/kg	8.70	8.70	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Copper, Total	48.0		mg/kg	8.70	8.70	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Iron, Total	37800		mg/kg	870	870.	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Lead, Total	114		mg/kg	2.61	2.61	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Manganese, Total	392		mg/kg	8.70	8.70	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Mercury, Total	ND		mg/kg	0.289	0.289	1	12/19/18 09:10	12/21/18 18:45	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	8.70	8.70	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	2.18	2.18	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM
Zinc, Total	484		mg/kg	43.5	43.5	10	12/18/18 11:40	12/20/18 15:35	EPA 3050B	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-17 Date Collected: 12/04/18 12:50
Client ID: MP-RB-SED-07FD-120418 Date Received: 12/05/18
Sample Location: ARLINGTON, MA Field Prep: Not Specified

Sample Depth:

Matrix: Sediment
Percent Solids: 20%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	25.3		mg/kg	2.38	2.38	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Barium, Total	121		mg/kg	14.3	14.3	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Cadmium, Total	ND		mg/kg	0.9519	0.9519	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Chromium, Total	51.3		mg/kg	9.52	9.52	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Copper, Total	74.1		mg/kg	9.52	9.52	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Iron, Total	57800		mg/kg	952	952.	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Lead, Total	163		mg/kg	2.86	2.86	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Manganese, Total	671		mg/kg	9.52	9.52	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Mercury, Total	ND		mg/kg	0.320	0.320	1	12/19/18 09:10	12/21/18 18:51	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	9.52	9.52	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	2.38	2.38	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM
Zinc, Total	264		mg/kg	47.6	47.6	10	12/18/18 11:40	12/20/18 15:44	EPA 3050B	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-18 Date Collected: 12/04/18 13:10
Client ID: MP-RB-SED-04-120418 Date Received: 12/05/18
Sample Location: ARLINGTON, MA Field Prep: Not Specified

Sample Depth:

Matrix: Sediment
Percent Solids: 24%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	11.7		mg/kg	1.99	1.99	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Barium, Total	62.2		mg/kg	11.9	11.9	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Cadmium, Total	ND		mg/kg	0.7952	0.7952	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Chromium, Total	26.2		mg/kg	7.95	7.95	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Copper, Total	39.9		mg/kg	7.95	7.95	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Iron, Total	31000		mg/kg	795	795.	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Lead, Total	159		mg/kg	2.38	2.38	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Manganese, Total	378		mg/kg	7.95	7.95	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Mercury, Total	ND		mg/kg	0.262	0.262	1	12/19/18 09:10	12/21/18 18:34	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	7.95	7.95	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	1.99	1.99	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM
Zinc, Total	185		mg/kg	39.8	39.8	10	12/18/18 11:40	12/20/18 15:08	EPA 3050B	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-19
Client ID: MP-RB-SED-05-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 13:30
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Sediment
Percent Solids: 21%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	20.3		mg/kg	2.35	2.35	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Barium, Total	136		mg/kg	14.1	14.1	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Cadmium, Total	0.9752		mg/kg	0.9390	0.9390	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Chromium, Total	56.5		mg/kg	9.39	9.39	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Copper, Total	85.9		mg/kg	9.39	9.39	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Iron, Total	46100		mg/kg	939	939.	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Lead, Total	320		mg/kg	2.82	2.82	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Manganese, Total	454		mg/kg	9.39	9.39	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Mercury, Total	ND		mg/kg	0.307	0.307	1	12/19/18 09:10	12/21/18 18:53	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	9.39	9.39	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	2.35	2.35	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM
Zinc, Total	305		mg/kg	47.0	47.0	10	12/18/18 11:40	12/20/18 17:56	EPA 3050B	97,6020B	AM

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-20
Client ID: MP-RB-SED-06-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 13:50
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Sediment
Percent Solids: 19%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	18.6		mg/kg	2.56	2.56	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Barium, Total	142		mg/kg	15.4	15.4	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Cadmium, Total	1.131		mg/kg	1.024	1.024	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Chromium, Total	69.2		mg/kg	10.2	10.2	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Copper, Total	74.5		mg/kg	10.2	10.2	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Iron, Total	64200		mg/kg	1020	1020	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Lead, Total	146		mg/kg	3.07	3.07	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Manganese, Total	422		mg/kg	10.2	10.2	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Mercury, Total	ND		mg/kg	0.345	0.345	1	12/19/18 09:10	12/21/18 18:55	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	10.2	10.2	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	2.56	2.56	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM
Zinc, Total	356		mg/kg	51.2	51.2	10	12/18/18 11:40	12/20/18 18:00	EPA 3050B	97,6020B	AM

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-21
Client ID: MP-UW-SED-02-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 14:50
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:

Matrix: Sediment
Percent Solids: 10%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	6.28		mg/kg	4.75	4.75	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Barium, Total	345		mg/kg	28.5	28.5	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Cadmium, Total	3.802		mg/kg	1.900	1.900	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Chromium, Total	23.3		mg/kg	19.0	19.0	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Copper, Total	235		mg/kg	19.0	19.0	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Iron, Total	72800		mg/kg	1900	1900	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Lead, Total	472		mg/kg	5.70	5.70	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Manganese, Total	186		mg/kg	19.0	19.0	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Mercury, Total	0.681		mg/kg	0.630	0.630	1	12/19/18 09:10	12/21/18 18:56	EPA 7471B	97,7471B	EA
Selenium, Total	ND		mg/kg	19.0	19.0	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Silver, Total	ND		mg/kg	4.75	4.75	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM
Zinc, Total	785		mg/kg	95.0	95.0	10	12/18/18 11:40	12/20/18 18:05	EPA 3050B	97,6020B	AM



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 14-21 Batch: WG1188095-1									
Mercury, Total	ND	mg/kg	0.083	0.083	1	12/19/18 09:10	12/21/18 18:29	97,7471B	EA

Prep Information

Digestion Method: EPA 7471B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-13 Batch: WG1188563-1									
Mercury, Dissolved	ND	mg/l	0.0002	0.0002	1	12/12/18 14:51	12/13/18 22:03	97,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-13 Batch: WG1190316-1									
Arsenic, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Barium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Cadmium, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Chromium, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Copper, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Iron, Dissolved	0.059	J	0.065	0.050	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Lead, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Manganese, Dissolved	ND	mg/l	0.0010	0.0010	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Selenium, Dissolved	ND	mg/l	0.005	0.005	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Silver, Dissolved	ND	mg/l	0.0005	0.0005	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM
Zinc, Dissolved	ND	mg/l	0.0100	0.0100	1	12/17/18 18:02	12/18/18 15:59	97,6020B	AM

Prep Information

Digestion Method: EPA 3005A



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 14-21 Batch: WG1190565-1									
Arsenic, Total	ND	mg/kg	0.625	0.625	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Barium, Total	ND	mg/kg	3.75	3.75	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Cadmium, Total	ND	mg/kg	0.2500	0.2500	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Chromium, Total	ND	mg/kg	2.50	2.50	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Copper, Total	ND	mg/kg	2.50	2.50	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Iron, Total	ND	mg/kg	250	250.	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Lead, Total	ND	mg/kg	0.750	0.750	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Manganese, Total	ND	mg/kg	2.50	2.50	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Selenium, Total	ND	mg/kg	2.50	2.50	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Silver, Total	ND	mg/kg	0.625	0.625	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM
Zinc, Total	ND	mg/kg	12.5	12.5	10	12/18/18 11:40	12/20/18 14:11	97,6020B	AM

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-12 Batch: WG1190797-1									
Hardness	ND	mg/l	0.660	NA	1	12/18/18 19:23	12/27/18 19:30	1,6010D	MC

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 14-21 Batch: WG1188095-2 WG1188095-3 SRM Lot Number: D102-540								
Mercury, Total	123		130		65-134	6		30
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-13 Batch: WG1188563-2 WG1188563-3								
Mercury, Dissolved	92		98		80-120	6		20
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-13 Batch: WG1190316-6 WG1190316-7								
Arsenic, Dissolved	100		103		80-120	3		20
Barium, Dissolved	104		108		80-120	4		20
Cadmium, Dissolved	100		110		80-120	10		20
Chromium, Dissolved	101		105		80-120	4		20
Copper, Dissolved	98		106		80-120	8		20
Iron, Dissolved	107		117		80-120	9		20
Lead, Dissolved	97		101		80-120	4		20
Manganese, Dissolved	100		105		80-120	5		20
Selenium, Dissolved	102		105		80-120	3		20
Silver, Dissolved	104		108		80-120	4		20
Zinc, Dissolved	106		112		80-120	6		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 14-21 Batch: WG1190565-6 WG1190565-7 SRM Lot Number: D102-540					
Arsenic, Total	109	110	83-117	1	30
Barium, Total	109	111	83-118	2	30
Cadmium, Total	112	115	83-118	3	30
Chromium, Total	102	102	83-117	0	30
Copper, Total	108	106	84-116	2	30
Iron, Total	96	98	61-139	2	30
Lead, Total	107	110	82-118	3	30
Manganese, Total	102	102	82-118	0	30
Selenium, Total	111	114	79-121	3	30
Silver, Total	115	115	80-120	0	30
Zinc, Total	105	106	81-118	1	30

Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-12 Batch: WG1190797-2

Hardness	106	-	80-120	-
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Matrix Spike Analysis
Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Qual Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1188095-4 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418											
Mercury, Total	ND	0.523	0.890	170	Q	-	-	-	75-125	-	35
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG1188563-4 WG1188563-5 QC Sample: L1849652-06 Client ID: MP-RB-SW-04-120418											
Mercury, Dissolved	ND	0.005	0.0043	86		0.0039	79		75-125	9	20
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG1190316-3 WG1190316-4 QC Sample: L1849652-06 Client ID: MP-RB-SW-04-120418											
Arsenic, Dissolved	ND	0.12	0.1211	101		0.1245	104		75-125	3	20
Barium, Dissolved	0.0519	2	2.082	102		2.225	109		75-125	7	20
Cadmium, Dissolved	ND	0.051	0.0559	110		0.0577	113		75-125	3	20
Chromium, Dissolved	0.0017	0.2	0.1980	98		0.2088	104		75-125	5	20
Copper, Dissolved	0.0021	0.25	0.2464	98		0.2686	107		75-125	9	20
Iron, Dissolved	1.85	1	3.15	130	Q	3.01	116		75-125	5	20
Lead, Dissolved	ND	0.51	0.4981	98		0.5217	102		75-125	5	20
Manganese, Dissolved	0.1210	0.5	0.6041	97		0.6329	102		75-125	5	20
Selenium, Dissolved	ND	0.12	0.114	95		0.130	108		75-125	13	20
Silver, Dissolved	ND	0.05	0.0518	104		0.0561	112		75-125	8	20
Zinc, Dissolved	0.0206	0.5	0.5419	104		0.5734	110		75-125	6	20

Matrix Spike Analysis
Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1190565-3 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418									
Arsenic, Total	11.7	39.4	53.3	106	-	-	75-125	-	35
Barium, Total	62.2	656	747	104	-	-	75-125	-	35
Cadmium, Total	ND	16.7	18.18	109	-	-	75-125	-	35
Chromium, Total	26.2	65.6	97.0	108	-	-	75-125	-	35
Copper, Total	39.9	82	130	110	-	-	75-125	-	35
Iron, Total	31000	328	38000	2130	Q	-	75-125	-	35
Lead, Total	159	167	350	114	-	-	75-125	-	35
Manganese, Total	378	164	614	144	Q	-	75-125	-	35
Selenium, Total	ND	39.4	38.1	97	-	-	75-125	-	35
Silver, Total	ND	98.4	109	111	-	-	75-125	-	35
Zinc, Total	185	164	372	114	-	-	75-125	-	35
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1190797-3 QC Sample: L1849652-01 Client ID: MP-RB-SW-01-120418									
Hardness	109	66.2	178	104	-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1188095-5 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418						
Mercury, Total	ND	ND	mg/kg	NC		35
MCP Total Metals - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1190565-4 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418						
Arsenic, Total	11.7	16.4	mg/kg	33		35
Barium, Total	62.2	88.7	mg/kg	35		35
Cadmium, Total	ND	ND	mg/kg	NC		35
Chromium, Total	26.2	37.2	mg/kg	35		35
Copper, Total	39.9	49.7	mg/kg	22		35
Iron, Total	31000	44300	mg/kg	35		35
Lead, Total	159	188	mg/kg	17		35
Manganese, Total	378	592	mg/kg	44	Q	35
Selenium, Total	ND	ND	mg/kg	NC		35
Silver, Total	ND	ND	mg/kg	NC		35
Zinc, Total	185	228	mg/kg	21		35

Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1190797-4 QC Sample: L1849652-01 Client ID: MP-RB-SW-01-120418

Hardness	109	111	mg/l	2	20
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Project Name: MCCLENNEN PARK
 Project Number: 2017-0069

**Lab Serial Dilution
 Analysis
 Batch Quality Control**

Lab Number: L1849652
 Report Date: 12/28/18

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG1190316-5 QC Sample: L1849652-06 Client ID: MP-RB-SW-04-120418						
Iron, Dissolved	1.85	1.98	mg/l	7		20
MCP Total Metals - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1190565-5 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418						
Iron, Total	31000	31100	mg/kg	0		20
Lead, Total	159	160	mg/kg	1		20
Manganese, Total	378	372	mg/kg	2		20

INORGANICS & MISCELLANEOUS

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-14
Client ID: MP-RB-SED-08-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 10:22
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	10.3	%	0.010	0.010	1	-	12/12/18 12:38	1,9060A	SP	
Total Organic Carbon (Rep2)	10.1	%	0.010	0.010	1	-	12/12/18 12:38	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	5.00	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	28.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	13.4	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	47.3	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	35.6	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	17.1	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	52.7	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	16.7	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-15
Client ID: MP-RB-SED-03-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 10:30
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	11.8	%	0.010	0.010	1	-	12/12/18 12:48	1,9060A	SP	
Total Organic Carbon (Rep2)	11.2	%	0.010	0.010	1	-	12/12/18 12:48	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	0.700	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	0.700	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	4.80	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	20.8	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	32.8	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	58.4	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	32.6	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	8.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	40.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	24.5	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-16
Client ID: MP-RB-SED-07-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 12:30
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	4.75	%	0.010	0.010	1	-	12/12/18 12:59	1,9060A	SP	
Total Organic Carbon (Rep2)	4.83	%	0.010	0.010	1	-	12/12/18 12:59	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	1.60	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	1.60	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	18.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	38.2	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	28.7	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	85.8	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	9.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	3.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	12.6	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	22.1	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-17
Client ID: MP-RB-SED-07FD-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 12:50
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.78	%	0.010	0.010	1	-	12/12/18 13:10	1,9060A	SP	
Total Organic Carbon (Rep2)	4.29	%	0.010	0.010	1	-	12/12/18 13:10	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	6.80	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	6.80	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	12.2	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	29.4	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	32.1	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	73.7	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	16.1	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	3.40	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	19.5	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	19.6	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-18
Client ID: MP-RB-SED-04-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 13:10
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	3.47	%	0.010	0.010	1	-	12/12/18 13:20	1,9060A	SP	
Total Organic Carbon (Rep2)	4.24	%	0.010	0.010	1	-	12/12/18 13:20	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	0.900	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	0.900	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	4.50	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	28.0	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	51.1	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	83.6	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	11.2	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	4.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	15.5	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	24.0	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-19
Client ID: MP-RB-SED-05-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 13:30
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	4.27	%	0.010	0.010	1	-	12/12/18 14:03	1,9060A	SP	
Total Organic Carbon (Rep2)	5.56	%	0.010	0.010	1	-	12/12/18 14:03	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	19.2	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	19.2	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	11.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	22.3	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	23.7	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	57.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	15.6	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	7.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	22.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	20.8	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-20
Client ID: MP-RB-SED-06-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 13:50
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	6.26	%	0.010	0.010	1	-	12/12/18 14:14	1,9060A	SP	
Total Organic Carbon (Rep2)	7.82	%	0.010	0.010	1	-	12/12/18 14:14	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	0.300	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	0.300	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	4.10	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	21.6	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	34.2	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	59.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	31.4	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	8.40	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	39.8	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	18.5	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	



Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

SAMPLE RESULTS

Lab ID: L1849652-21
Client ID: MP-UW-SED-02-120418
Sample Location: ARLINGTON, MA

Date Collected: 12/04/18 14:50
Date Received: 12/05/18
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab										
Total Organic Carbon (Rep1)	31.8	%	0.010	0.010	1	-	12/12/18 14:25	1,9060A	SP	
Total Organic Carbon (Rep2)	31.9	%	0.010	0.010	1	-	12/12/18 14:25	1,9060A	SP	
Grain Size Analysis - Mansfield Lab										
Cobbles	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Gravel	ND	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Gravel	3.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Gravel	3.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Coarse Sand	14.3	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Medium Sand	42.4	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Fine Sand	26.1	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Sand	82.8	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Silt Fine	5.60	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Clay Fine	8.30	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
% Total Fines	13.9	%	0.100	NA	1	-	12/06/18 11:12	12,D6913/D7928	GD	
General Chemistry - Mansfield Lab										
Solids, Total	9.97	%	0.100	0.100	1	-	12/06/18 12:43	121,2540G	GD	

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Method Blank Analysis
Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Organic Carbon - Mansfield Lab for sample(s): 14-21 Batch: WG1188863-1									
Total Organic Carbon (Rep1)	ND	%	0.010	0.010	1	-	12/12/18 09:23	1,9060A	SP
Total Organic Carbon (Rep2)	ND	%	0.010	0.010	1	-	12/12/18 09:23	1,9060A	SP



Lab Control Sample Analysis

Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 14-21 Batch: WG1188863-2								
Total Organic Carbon (Rep1)	103	-	-	-	75-125	-	-	25
Total Organic Carbon (Rep2)	98	-	-	-	75-125	-	-	25

Matrix Spike Analysis
Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1188863-4 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418												
Total Organic Carbon (Rep1)	3.47	0.807	4.13	82		-	-	-	75-125	-	-	25
Total Organic Carbon (Rep2)	4.24	1.08	4.40	15	Q	-	-	-	75-125	-	-	25

Lab Duplicate Analysis
Batch Quality Control

Project Name: MCCLENNEN PARK
Project Number: 2017-0069

Lab Number: L1849652
Report Date: 12/28/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Grain Size Analysis - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1186360-1 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418						
Cobbles	ND	ND	%	NC		20
% Coarse Gravel	ND	ND	%	NC		20
% Fine Gravel	0.900	1.70	%	62	Q	20
% Total Gravel	0.900	1.70	%	62	Q	20
% Coarse Sand	4.50	4.60	%	2		20
% Medium Sand	28.0	23.5	%	17		20
% Fine Sand	51.1	51.5	%	1		20
% Total Sand	83.6	79.6	%	5		20
% Silt Fine	11.2	14.5	%	26	Q	20
% Clay Fine	4.30	4.20	%	2		20
% Total Fines	15.5	18.7	%	19		20

General Chemistry - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1186363-1 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418						
Solids, Total	24.0	25.6	%	6		10

Total Organic Carbon - Mansfield Lab Associated sample(s): 14-21 QC Batch ID: WG1188863-3 QC Sample: L1849652-18 Client ID: MP-RB-SED-04-120418						
Total Organic Carbon (Rep1)	3.47	3.51	%	1		25
Total Organic Carbon (Rep2)	4.24	4.18	%	1		25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1849652-01A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-01B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-01X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-02A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-02B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-02X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-03A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-03B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-03X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-04A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-04B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1849652-04X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-05A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-05B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-05X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-06A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-06A1	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-06A2	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-06B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-06X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-06X1	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-06X2	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-07A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-07B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1849652-07X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-08A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-08B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-08X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-09A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-09B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-09X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-10A	Plastic 250ml unpreserved	A	7	7	4.9	Y	Absent		-
L1849652-10B	Plastic 250ml HNO3 preserved	A	<2	<2	4.9	Y	Absent		HARDT(180)
L1849652-10X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.9	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-11A	Plastic 250ml unpreserved	B	7	7	4.1	Y	Absent		-
L1849652-11B	Plastic 250ml HNO3 preserved	B	<2	<2	4.1	Y	Absent		HARDT(180)
L1849652-11X	Plastic 120ml HNO3 preserved Filtrates	B	NA		4.1	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-12A	Plastic 250ml unpreserved	B	7	7	4.1	Y	Absent		-

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1849652-12B	Plastic 250ml HNO3 preserved	B	<2	<2	4.1	Y	Absent		HARDT(180)
L1849652-12X	Plastic 120ml HNO3 preserved Filtrates	B	NA		4.1	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-13A	Plastic 250ml unpreserved	B	7	7	4.1	Y	Absent		-
L1849652-13X	Plastic 120ml HNO3 preserved Filtrates	B	NA		4.1	Y	Absent		MCP-PB-6020S-10(180),MCP-7470S-10(28),MCP-CU-6020S-10(180),MCP-FE-6020S-10(180),MCP-BA-6020S-10(180),MCP-CD-6020S-10(180),MCP-MN-6020S-10(180),MCP-SE-6020S-10(180),MCP-AS-6020S-10(180),MCP-AG-6020S-10(180),MCP-ZN-6020S-10(180),MCP-CR-6020S-10(180)
L1849652-14A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()
L1849652-14B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)
L1849652-15A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1849652-15B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)
L1849652-16A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()
L1849652-16B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)
L1849652-17A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()
L1849652-17B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)
L1849652-18A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1849652-18B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)
L1849652-18B1	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-PREP-3050:1T(180)
L1849652-18B2	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-PREP-3050:1T(180)
L1849652-19A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()
L1849652-19B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1849652-20A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()
L1849652-20B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)
L1849652-21A	Plastic 8oz unpreserved for Grain Size	B	NA		4.1	Y	Absent		A2-HYDRO-TFINE(),A2-HYDRO-CFINE(),A2-HYDRO-CGRAVEL(),A2-HYDRO-FSAND(),A2-HYDRO-MSAND(),A2-HYDRO-TGRAVEL(),A2-HYDRO-CSAND(),A2-HYDRO-SFINE(),A2-HYDRO-TSAND(),A2-HYDRO-COBLES(),A2-HYDRO-FGRAVEL()
L1849652-21B	Glass 250ml/8oz unpreserved	B	NA		4.1	Y	Absent		A2-BA-MCP6020T-10(180),A2-CR-MCP6020T-10(180),A2-AG-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-MN-MCP6020T-10(180),A2-TS(7),A2-ZN-MCP6020T-10(180),A2-FE-MCP6020T-10(180),A2-CU-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-SE-MCP6020T-10(180),A2-HGPREP-AA(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-TOC-9060-2REPS(28),A2-PREP-3050:1T(180)

*Values in parentheses indicate holding time in days

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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedances are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.
- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

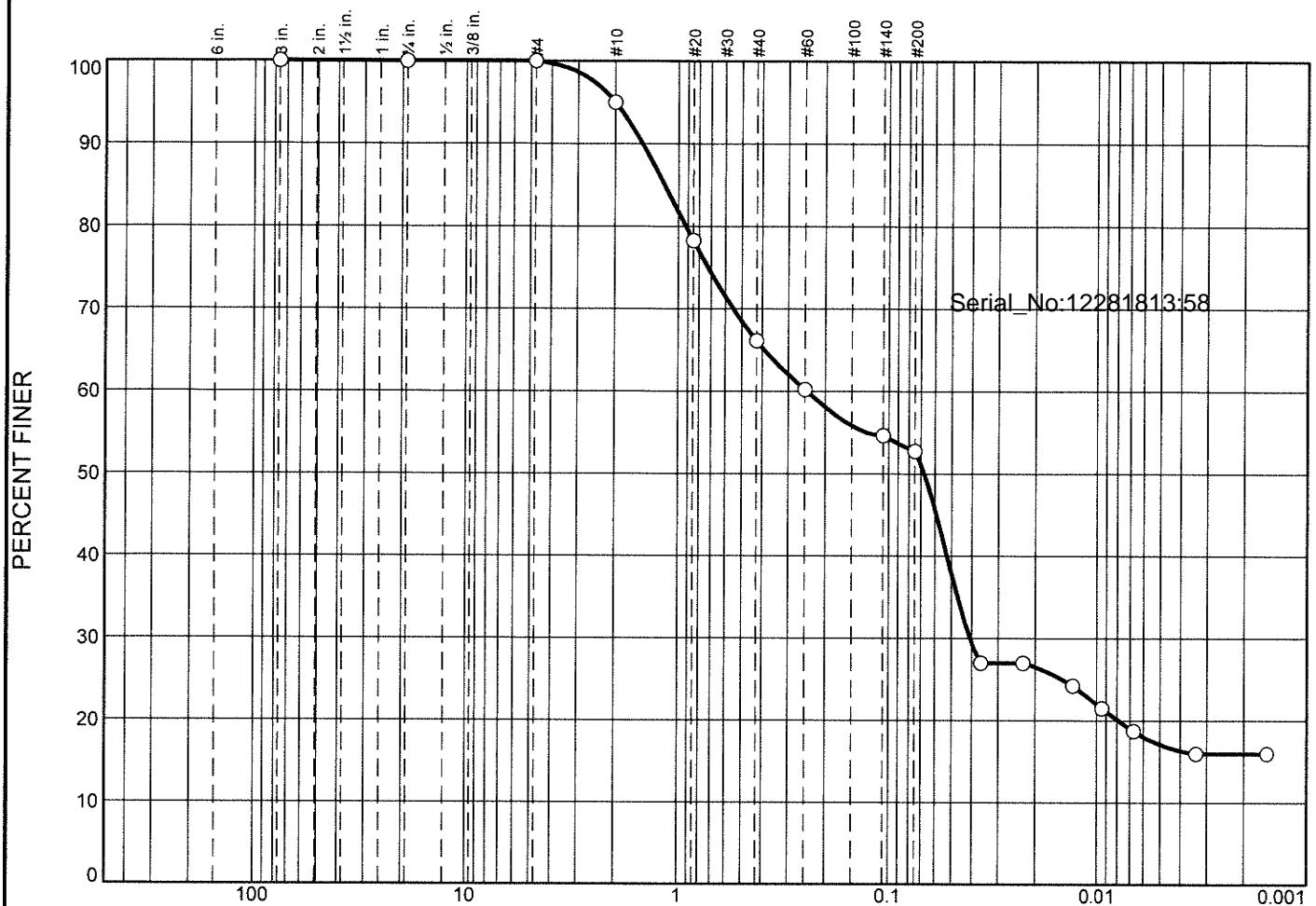


Serial_No:12281813:58

ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input checked="" type="checkbox"/>	0.0	0.0	0.0	5.0	28.9	13.4	35.6	17.1	
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input checked="" type="checkbox"/>				1.1632	0.2449	0.0675	0.0408		C _c
<input checked="" type="checkbox"/>									C _u
Material Description								USCS	AASHTO
<input checked="" type="checkbox"/>									

Project No.	Client:	Remarks:
Project:		
<input checked="" type="checkbox"/> Source of Sample: MP-RB-SED-08-120418	Sample Number: L1849652-14	
Date: <input checked="" type="checkbox"/>		
Alpha Analytical		
Mansfield, MA		

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-08-120418

Sample Number: L1849652-14

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.97
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
8.97	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	0.00	0.00	100.0	
		#10	0.45	0.00	95.0	
		#20	1.50	0.00	78.3	
		#40	1.09	0.00	66.1	
		#60	0.53	0.00	60.2	
		#140	0.50	0.00	54.6	
		#200	0.17	0.00	52.7	

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 52.7
 Weight of hydrometer sample = 15.35

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0045	1.0049	0.0132	4.5	15.1	0.0362	27.0
5.00	22.9	1.0045	1.0049	0.0132	4.5	15.1	0.0229	27.0
15.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0133	24.2
30.00	22.9	1.0035	1.0039	0.0132	3.5	15.4	0.0094	21.5
60.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0067	18.7
240.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0034	16.0
1140.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0015	16.0

Fractional Components

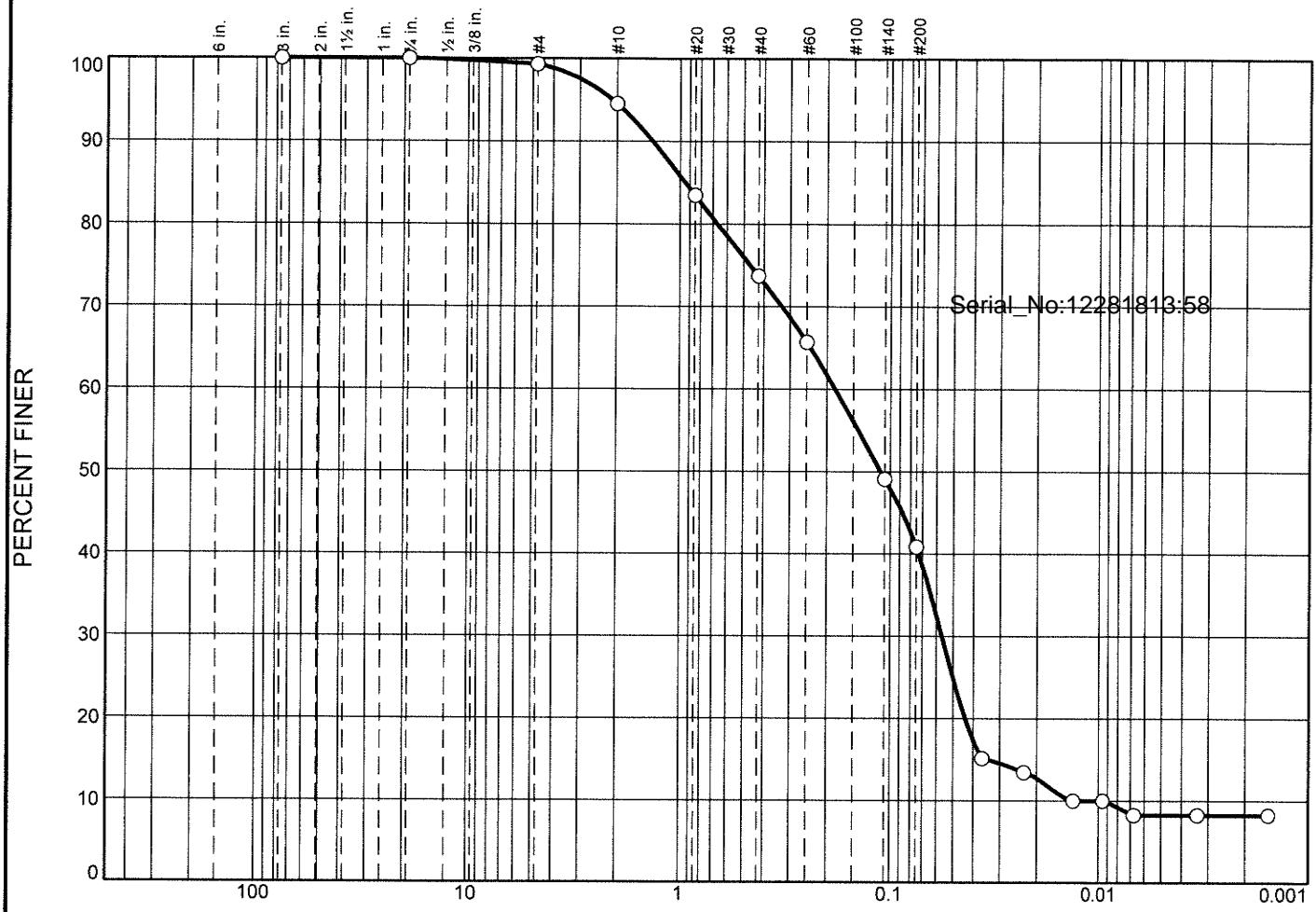
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	5.0	28.9	13.4	47.3	35.6	17.1	52.7

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0079	0.0408	0.0525	0.0675	0.2449	0.9228	1.1632	1.4834	2.0025

Fineness Modulus
1.28

Alpha Analytical

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
0.0	0.0	0.7	4.8	20.8	32.8	32.6	8.3	
Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
			0.9464	0.1829	0.1109	0.0566	0.0345	0.0136
Material Description								USCS
								AASHTO

Project No.	Client:	Remarks:
Project:		
<input type="checkbox"/> Source of Sample: MP-RB-SED-03-120418	Sample Number: L1849652-15	
Date: <input type="text"/>		
Alpha Analytical		
Mansfield, MA		
Figure		

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-03-120418

Sample Number: L1849652-15

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.41

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
19.41	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	0.13	0.00	99.3	
		#10	0.93	0.00	94.5	
		#20	2.15	0.00	83.5	
		#40	1.89	0.00	73.7	
		#60	1.56	0.00	65.7	
		#140	3.22	0.00	49.1	
		#200	1.60	0.00	40.9	

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 40.9

Weight of hydrometer sample = 19.04

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0363	15.1
5.00	22.9	1.0035	1.0039	0.0132	3.5	15.4	0.0231	13.4
15.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0134	10.0
30.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0095	10.0
60.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0068	8.3
240.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0034	8.3
1140.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0015	8.3

Fractional Components

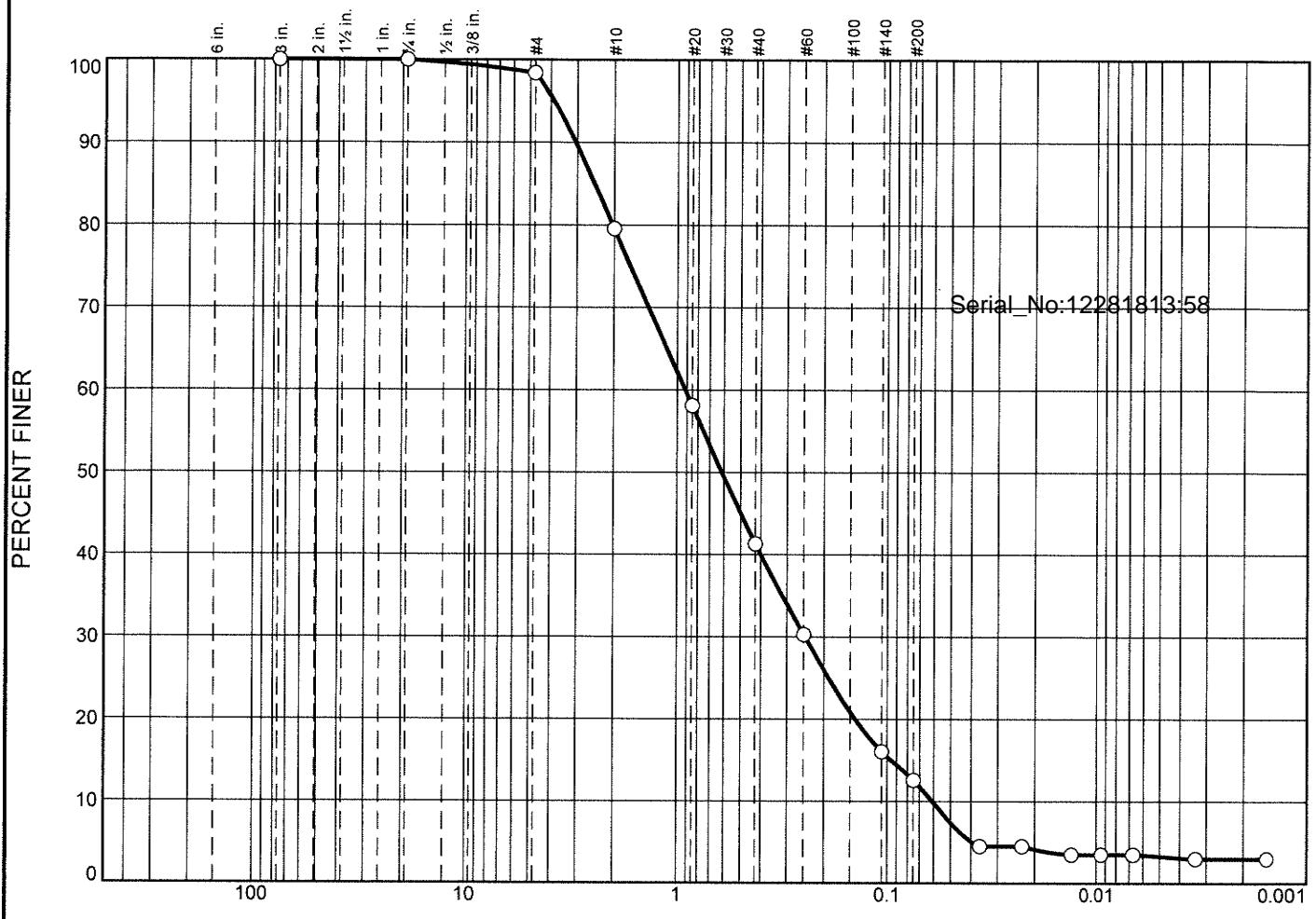
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.7	0.7	4.8	20.8	32.8	58.4	32.6	8.3	40.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0136	0.0345	0.0438	0.0566	0.0731	0.1109	0.1829	0.6652	0.9464	1.3548	2.1005	

Fineness Modulus	C _u	C _c
1.14	13.48	1.29

Alpha Analytical

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
0.0	0.0	0.0	1.6	18.9	38.2	28.7	9.3	3.3	
Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
			2.4782	0.9165	0.6133	0.2461	0.0958	0.0610	1.08
									15.01
Material Description								USCS	AASHTO

Project No.	Client:	Remarks:
Project:		
<input type="checkbox"/> Source of Sample: MP-RB-SED-07-120418	Sample Number: L1849652-16	
Date: <input type="text"/>		
Alpha Analytical		
Mansfield, MA		
Figure		

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-07-120418

Sample Number: L1849652-16

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.91
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
34.91	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	0.56	0.00	98.4	
		#10	6.58	0.00	79.5	
		#20	7.48	0.00	58.1	
		#40	5.86	0.00	41.3	
		#60	3.85	0.00	30.3	
		#140	4.98	0.00	16.0	
		#200	1.21	0.00	12.6	

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 12.6
 Weight of hydrometer sample = 19.7

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0363	4.5
5.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0230	4.5
15.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0134	3.5
30.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0095	3.5
60.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0067	3.5
240.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0034	3.0
1140.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0015	3.0

Fractional Components

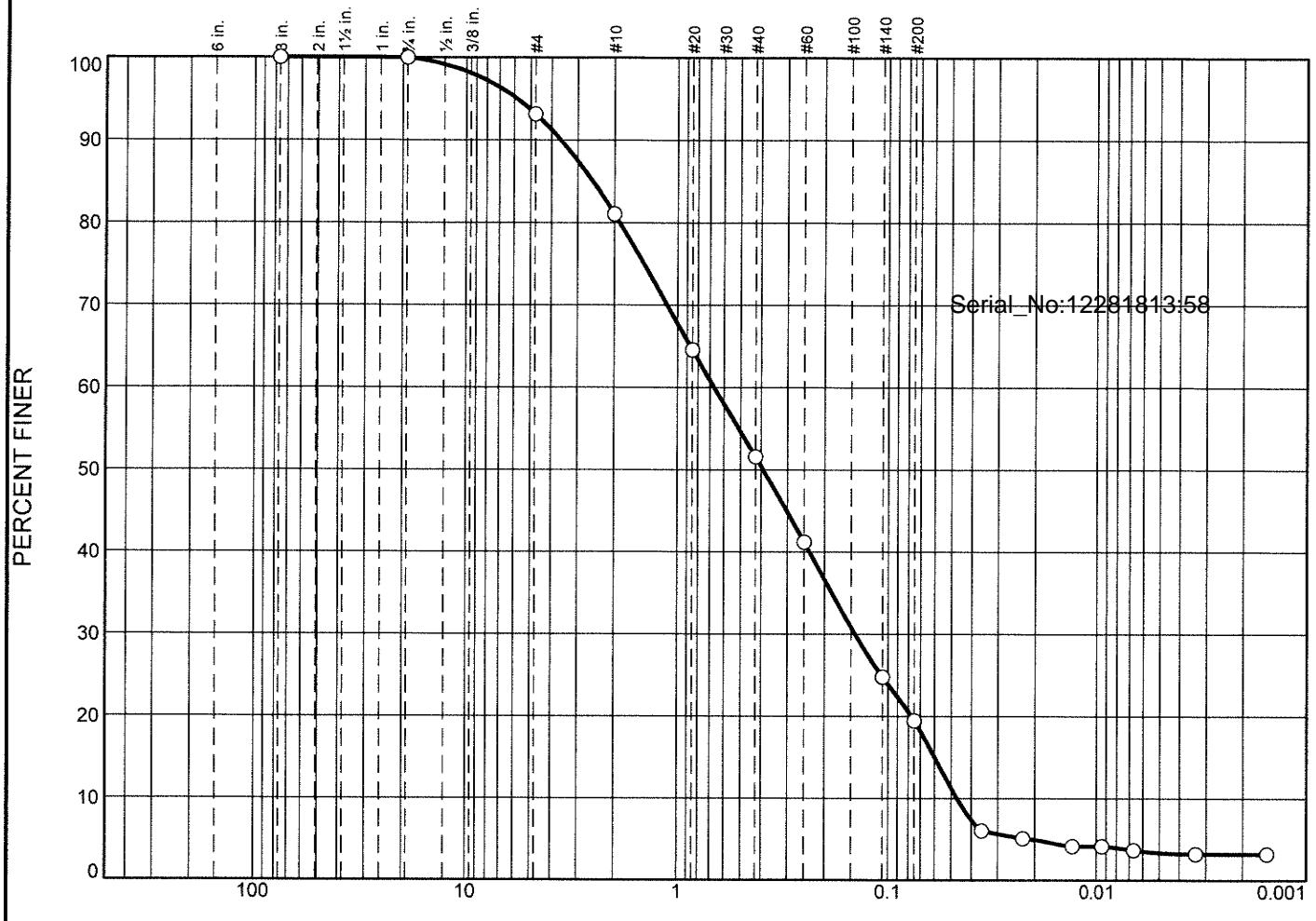
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.6	1.6	18.9	38.2	28.7	85.8	9.3	3.3	12.6

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0396	0.0610	0.0958	0.1421	0.2461	0.4001	0.6133	0.9165	2.0358	2.4782	3.0464	3.8581

Fineness Modulus	C _u	C _c
2.48	15.01	1.08

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
0.0	0.0	6.8	12.2	29.4	32.1	16.1	3.4		
Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _C
			2.5376	0.6675	0.3909	0.1433	0.0599	0.0470	0.65
									14.21
Material Description								USCS	AASHTO
Project No.	Client:							Remarks:	

Project:	<input type="checkbox"/> Source: MP-RB-SED-07FD-120418	Sample No.: L1849652-17	
Date:	<input type="checkbox"/>		
Alpha Analytical			
Mansfield, MA			Figure

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-07FD-120418

Sample Number: L1849652-17

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 24.25
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
24.25	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	1.66	0.00	93.2	
		#10	2.94	0.00	81.0	
		#20	3.99	0.00	64.6	
		#40	3.15	0.00	51.6	
		#60	2.52	0.00	41.2	
		#140	3.98	0.00	24.8	
		#200	1.29	0.00	19.5	

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 19.5

Weight of hydrometer sample = 33.1

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0060	1.0064	0.0132	6.0	14.7	0.0357	6.0
5.00	22.9	1.0050	1.0054	0.0132	5.0	15.0	0.0228	5.1
15.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0133	4.1
30.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0094	4.1
60.00	22.9	1.0035	1.0039	0.0132	3.5	15.4	0.0067	3.7
240.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0033	3.2
1140.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0015	3.2

Fractional Components

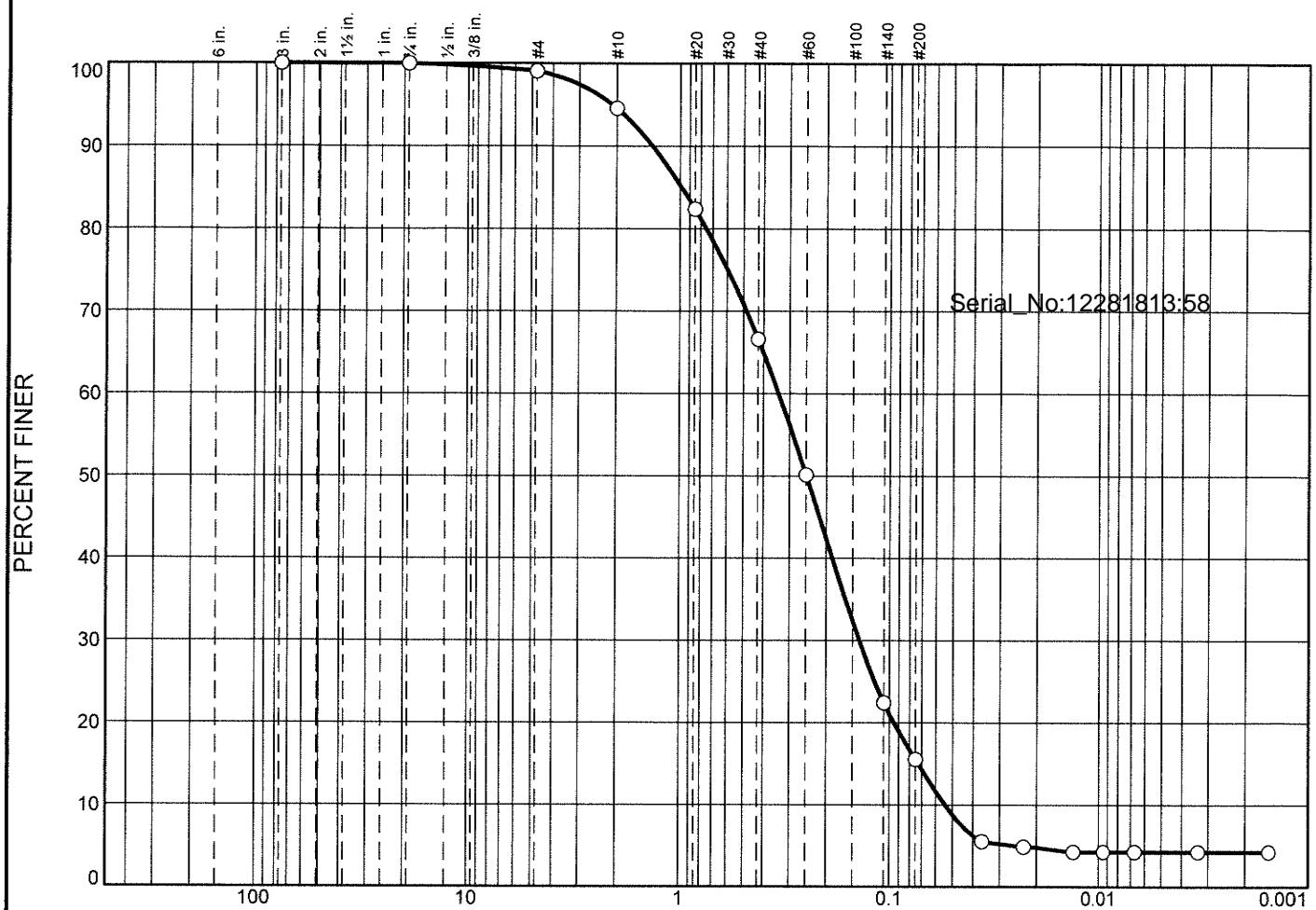
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	6.8	6.8	12.2	29.4	32.1	73.7	16.1	3.4	19.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0206	0.0470	0.0599	0.0774	0.1433	0.2358	0.3909	0.6675	1.8875	2.5376	3.6044	5.8092

Fineness Modulus	C _u	C _c
2.20	14.21	0.65

Alpha Analytical

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0.0	0.0	0.9	4.5	28.0	51.1	11.2	4.3	
<input type="radio"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>				0.9838	0.3388	0.2491	0.1390	0.0728	0.0542
<input type="radio"/>	Material Description								USCS
<input type="radio"/>									AASHTO

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source of Sample: MP-RB-SED-04-120418	Sample Number: L1849652-18	
Date: <input type="radio"/>		
Alpha Analytical		
Mansfield, MA		

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-04-120418

Sample Number: L1849652-18

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.12

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
17.12	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	0.16	0.00	99.1	
		#10	0.77	0.00	94.6	
		#20	2.09	0.00	82.4	
		#40	2.70	0.00	66.6	
		#60	2.82	0.00	50.1	
		#140	4.74	0.00	22.4	
		#200	1.18	0.00	15.5	

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 15.5

Weight of hydrometer sample = 19.91

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0363	5.5
5.00	22.9	1.0035	1.0039	0.0132	3.5	15.4	0.0231	4.9
15.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0134	4.3
30.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0095	4.3
60.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0067	4.3
240.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0033	4.3
1140.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0015	4.3

Fractional Components

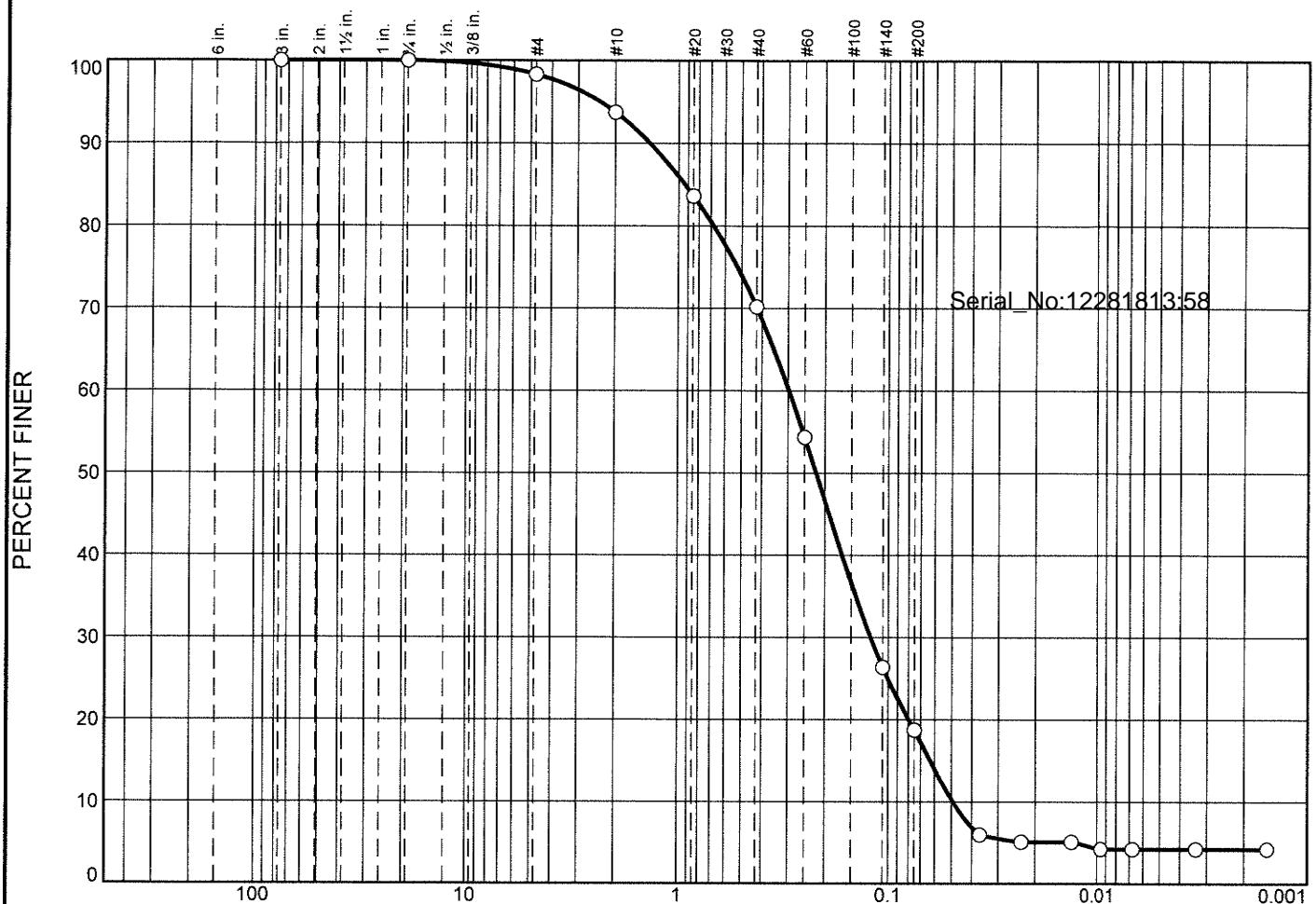
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.9	0.9	4.5	28.0	51.1	83.6	11.2	4.3	15.5

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0253	0.0542	0.0728	0.0950	0.1390	0.1872	0.2491	0.3388	0.7525	0.9838	1.3533	2.0979

Fineness Modulus	C _u	C _c
1.54	6.25	1.05

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel			% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine		Silt	Clay		
<input type="radio"/>	0.0	0.0	1.7	4.6	23.5	51.5		14.5	4.2		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.9326	0.2974	0.2204	0.1211	0.0631	0.0492	1.00	6.05
Material Description										USCS	AASHTO
<input type="radio"/>											

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source: MP-RB-SED-04-120418	Sample No.: WG1186360-1	
Date: <input type="radio"/>		
Alpha Analytical		
Mansfield, MA		
Figure		

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-04-120418

Sample Number: WG1186360-1

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.02
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
15.02	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	0.25	0.00	98.3	
		#10	0.69	0.00	93.7	
		#20	1.52	0.00	83.6	
		#40	2.02	0.00	70.2	
		#60	2.38	0.00	54.3	
		#140	4.20	0.00	26.4	
		#200	1.15	0.00	18.7	

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 18.7
 Weight of hydrometer sample = 17.07

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0367	6.0
5.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0233	5.1
15.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0134	5.1
30.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0095	4.2
60.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0068	4.2
240.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0034	4.2
1140.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0015	4.2

Fractional Components

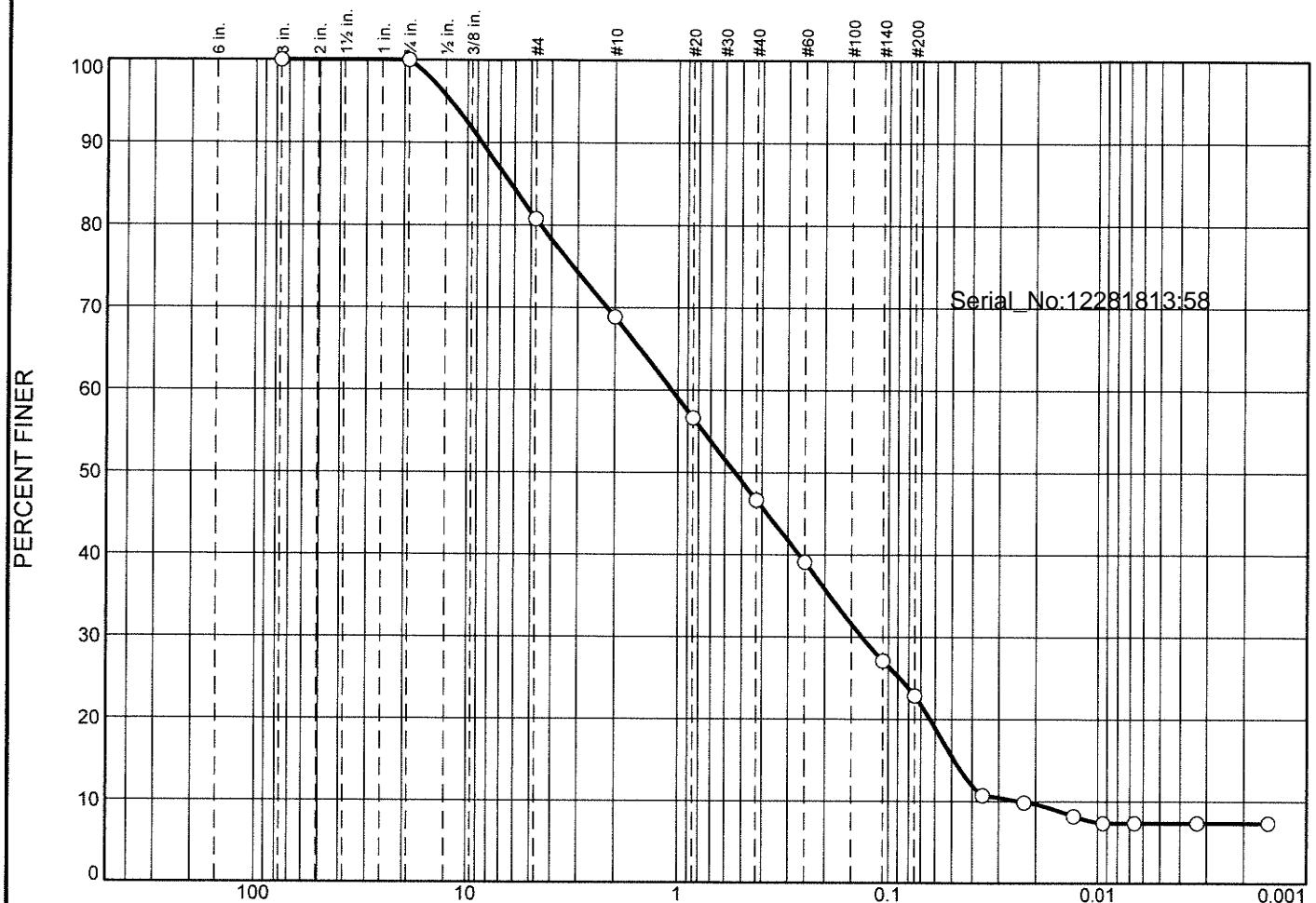
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.7	1.7	4.6	23.5	51.5	79.6	14.5	4.2	18.7

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0129	0.0492	0.0631	0.0798	0.1211	0.1655	0.2204	0.2974	0.6800	0.9326	1.3702	2.3586

Fineness Modulus	C _u	C _c
1.44	6.05	1.00

Alpha Analytical

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	19.2	11.9	22.3	23.7	15.6	7.3		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	
<input type="radio"/>				6.2360	1.0707	0.5377	0.1335	0.0487	0.0241	0.69
										44.37
Material Description								USCS	AASHTO	
<input type="radio"/>										

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source of Sample: MP-RB-SED-05-120418	Sample Number: L1849652-19	
Date: <input type="radio"/>		
Alpha Analytical		
Mansfield, MA		

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-05-120418

Sample Number: L1849652-19

Stevens Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 28.94

Tare Wt. = 0.00

Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
28.94	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	5.57	0.00	80.8	
		#10	3.44	0.00	68.9	
		#20	3.54	0.00	56.6	
		#40	2.89	0.00	46.6	
		#60	2.18	0.00	39.1	
		#140	3.48	0.00	27.1	
		#200	1.22	0.00	22.9	

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 22.9

Weight of hydrometer sample = 21.97

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0060	1.0064	0.0132	6.0	14.7	0.0357	10.7
5.00	22.9	1.0055	1.0059	0.0132	5.5	14.8	0.0227	9.9
15.00	22.9	1.0045	1.0049	0.0132	4.5	15.1	0.0132	8.2
30.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0094	7.3
60.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0066	7.3
240.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0033	7.3
1140.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0015	7.3

Fractional Components

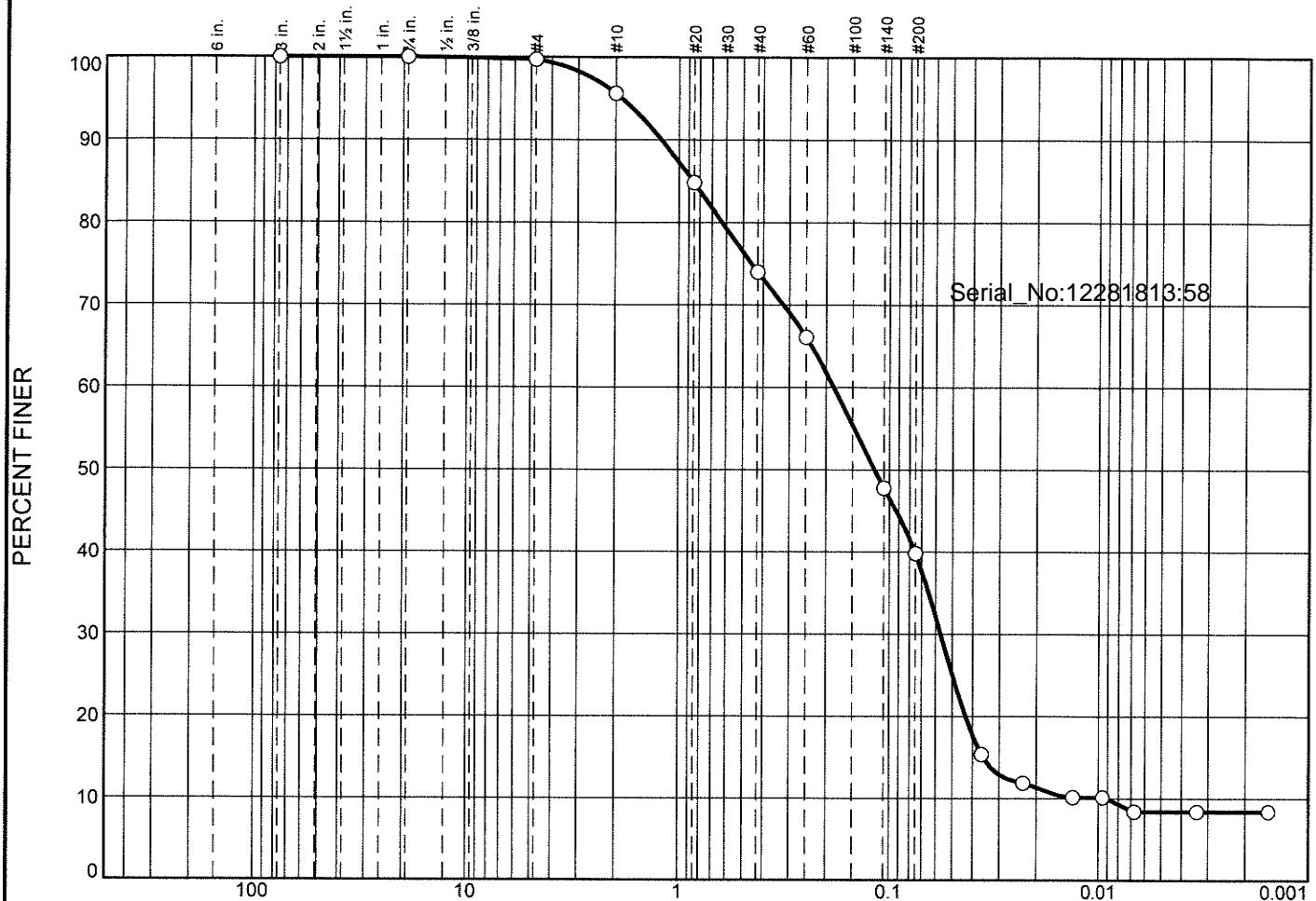
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	19.2	19.2	11.9	22.3	23.7	57.9	15.6	7.3	22.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0241	0.0487	0.0634	0.1335	0.2657	0.5377	1.0707	4.5156	6.2360	8.5348	11.9932

Fineness Modulus	C _u	C _c
2.70	44.37	0.69

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.											
% +3"		% Gravel			% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/>	0.0	0.0	0.3	4.1	21.6	34.2	31.4	8.4			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.8612	0.1840	0.1176	0.0568	0.0357	0.0092	1.91	20.10
Material Description										USCS	AASHTO
<input type="radio"/>											

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source of Sample: MP-RB-SED-06-120418	Sample Number: L1849652-20	
Date: <input type="radio"/>		
Alpha Analytical		
Mansfield, MA		

Remarks:

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-RB-SED-06-120418

Sample Number: L1849652-20

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.51
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
21.51	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	0.06	0.00	99.7	
		#10	0.88	0.00	95.6	
		#20	2.33	0.00	84.8	
		#40	2.32	0.00	74.0	
		#60	1.70	0.00	66.1	
		#140	3.94	0.00	47.8	
		#200	1.71	0.00	39.8	

Hydrometer Test Data

Hydrometer test uses material passing #200
 Percent passing #200 based upon complete sample = 39.8
 Weight of hydrometer sample = 18.3

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0040	1.0044	0.0132	4.0	15.2	0.0363	15.4
5.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0232	11.9
15.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0134	10.1
30.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0095	10.1
60.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0068	8.4
240.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0034	8.4
1140.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0015	8.4

Fractional Components

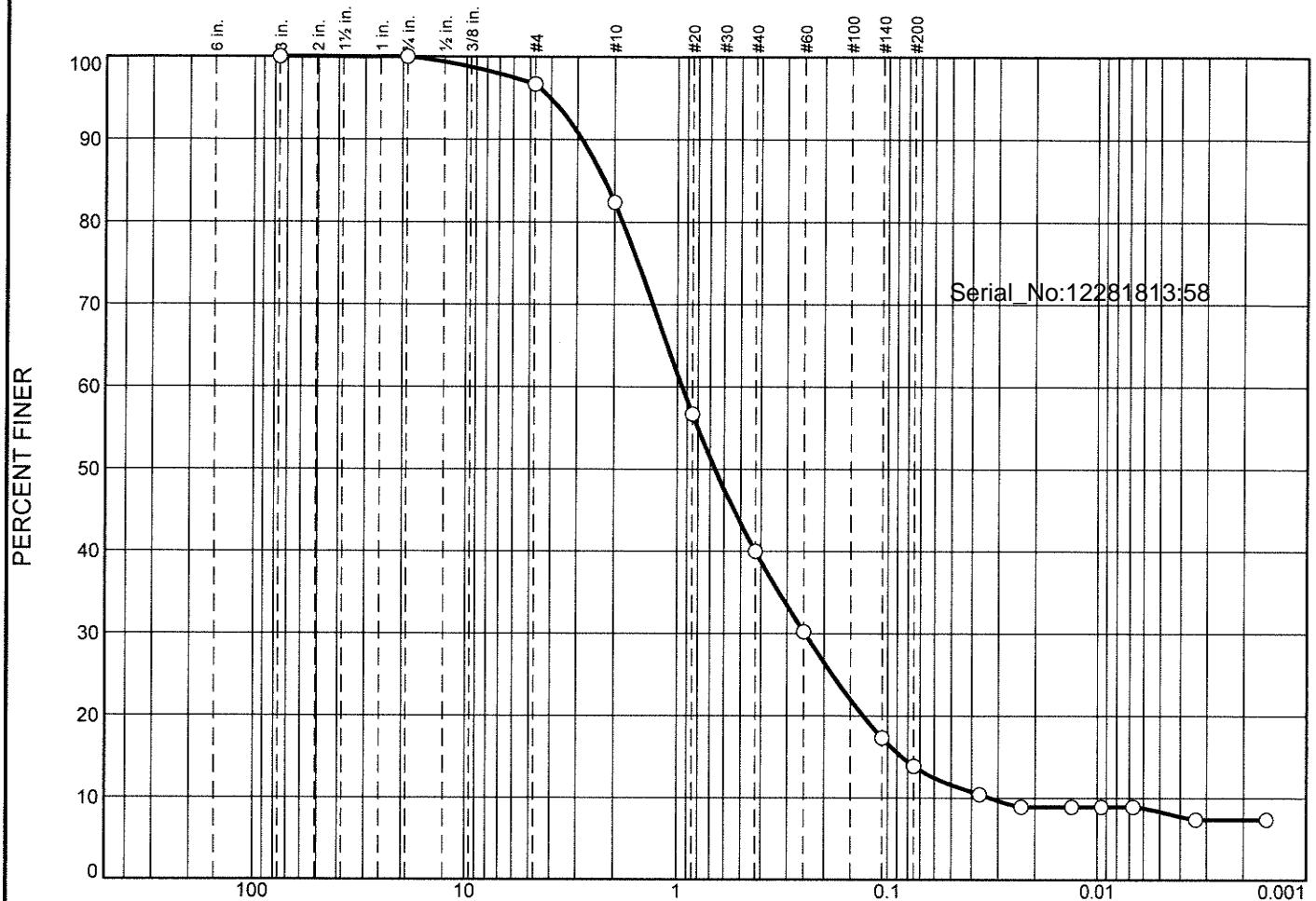
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	4.1	21.6	34.2	59.9	31.4	8.4	39.8

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0092	0.0357	0.0433	0.0568	0.0754	0.1176	0.1840	0.6274	0.8612	1.2149	1.8666

Fineness Modulus	C _u	C _c
1.10	20.10	1.91

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"		% Gravel			% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	3.3	14.3	42.4	26.1	5.6	8.3		
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
<input type="radio"/>				2.2298	0.9505	0.6629	0.2466	0.0855	0.0328	1.95
<input type="radio"/>										28.95
Material Description									USCS	AASHTO
<input type="radio"/>										

Project No.	Client:	Remarks:
Project:		
<input type="radio"/> Source of Sample: MP-UW-SED-02-120418	Sample Number: L1849652-21	
Date: <input type="radio"/>		
Alpha Analytical		
Mansfield, MA		

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

12/27/2018

Location: MP-UW-SED-02-120418

Sample Number: L1849652-21

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 6.35
 Tare Wt. = 0.00
 Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Serial_No:12281813:58
6.35	0.00	3	0.00	0.00	100.0	
		0.75	0.00	0.00	100.0	
		#4	0.21	0.00	96.7	
		#10	0.91	0.00	82.4	
		#20	1.63	0.00	56.7	
		#40	1.06	0.00	40.0	
		#60	0.62	0.00	30.2	
		#140	0.82	0.00	17.3	
		#200	0.22	0.00	13.9	

Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 13.9

Weight of hydrometer sample = 7.24

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = 0

Meniscus correction only = 0.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation: $L = 16.294964 - 0.2645 \times Rm$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	1.0030	1.0034	0.0132	3.0	15.5	0.0367	10.4
5.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0233	8.9
15.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0134	8.9
30.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0095	8.9
60.00	22.9	1.0025	1.0029	0.0132	2.5	15.6	0.0067	8.9
240.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0034	7.4
1140.00	22.9	1.0020	1.0024	0.0132	2.0	15.8	0.0015	7.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	3.3	3.3	14.3	42.4	26.1	82.8	5.6	8.3	13.9

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0328	0.0855	0.1305	0.2466	0.4250	0.6629	0.9505	1.8295	2.2298	2.8515	4.0226	

Fineness Modulus	C _u	C _c
2.49	28.95	1.95

Alpha Analytical

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; **SCM:** Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B:**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg. EPA 522.**

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 3

8 Walkup Drive
Westboro, MA 01581
Tel: 508-896-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: WOODS HOLE GROUP
Address: 107 WATERHOUSE RD.
BOURNE, MA 02532
Phone: 508-540-8080
Email: jfamely@whgrp.com

Additional Project Information:

"RCRA 8+" = RCRA 8 + Cu + Fe + Mn + Zn

BILL TO TOWN OF ARLINGTON (CONTACT VIA SUSAN CHAPMICK)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials	ANALYSIS										TOTAL # BOTTLES	
		Date	Time			VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 524.2	SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	EPH: <input type="checkbox"/> RCRAS <input checked="" type="checkbox"/> RCRAS+ <input type="checkbox"/> PP13	VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	PCB: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	TPH: <input type="checkbox"/> PEST <input type="checkbox"/> Quant only <input type="checkbox"/> Fingerprint	HARDNESS				
49652-01	MP-RB-SW-01-120418	12/4/18	8:25	SW	8F	1				1						2	
02	MP-RB-SW-02-120418		8:40			1				1							2
03	MP-RB-SW-03-120418		8:55			1				1							2
04	MP-RB-SW-07-120418		9:10			1				1							2
05	MP-RB-SW-07FD-120418		9:12			1				1							2
06	MP-RB-SW-04 MSMD-120418		9:25			3				1							4
07	MP-RB-SW-05-120418		9:35			1				1							2
08	MP-RB-SW-06-120418		9:50			1				1							2
09	MP-UW-SW-01-120418		11:05			1				1							2
10	MP-UW-SW-02-120418		11:20			1				1							2

Container Type

P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative

A= None
B= HCl
C= HNO₃
D= H₂SO₄
E= NaOH
F= MeOH
G= NaHSO₄
H= Na₂S₂O₃
I= Ascorbic Acid
J= NH₄Cl
K= Zn Acetate
O= Other

Container Type

P

P

Preservative

A

C

Relinquished By:	Date/Time	Received By:	Date/Time	All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
	12/5/18 11:00		12/5/18 11:00	FORM NO: 01-01 (rev. 12-Mar-2012)



CHAIN OF CUSTODY

PAGE 2 OF 3Date Rec'd in Lab: 12/05/18ALPHA Job #: 11649652

Client Information		Project Information		Report Information - Data Deliverables		Billing Information	
		Project Name: <u>MCLLENENEN PARK</u>		<input checked="" type="checkbox"/> ADEX <input type="checkbox"/> EMAIL		<input type="checkbox"/> Same as Client Info PO #:	
		Project Location: <u>ARLINGTON, MA</u>		Regulatory Requirements & Project Information Requirements			
Client: <u>WOODS HOLE GROUP</u>		Project #: <u>2017-0069</u>		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MA MCP Analytical Methods <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Matrix Spike Required on this SDG? (Required for MCP Inorganics) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No GW1 Standards (Info Required for Metals & EPH with Targets) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NPDES RGP <input type="checkbox"/> Other State /Fed Program _____ Criteria _____		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No CT RCP Analytical Methods	
Address: <u>107 WATERHOUSE RD.</u> <u>BOURNE, MA 02532</u>		Project Manager: <u>JOE FAMELY</u>					
Phone: <u>508-540-8080</u>		ALPHA Quote #:					
Email: <u>jfamely@whgrp.com</u>		Turn-Around Time					
		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH (only confirmed if pre-approved)					
		Date Due:					
Additional Project Information: "RCRA 8+" = RCRA 8 + Cu + Fe + Mn + Zn BILL TO TOWN OF ARLINGTON (CONTACT VIA SUSAN CHAPNICK)							
ANALYSIS							
VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 524.2		SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH		METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15		EPH: <input type="checkbox"/> RCRAS <input checked="" type="checkbox"/> RCRAR+ <input type="checkbox"/> PP13	
RPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only		PCB: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only		TPH: <input type="checkbox"/> PEST <input type="checkbox"/> Quant Only		HARDNESS <input type="checkbox"/> Fingerprint	
METALS <input type="checkbox"/> RCRA 8+		TOC <input type="checkbox"/>		METALS <input type="checkbox"/>		GRAIN SIZE <input type="checkbox"/>	
SAMPLE INFO							
Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do <input checked="" type="checkbox"/>							
Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/>							
Sample Comments							
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Sample Matrix	Sampler Initials			
49652-11	MP-RB-SW-08-120418	12/4/18	10:13	SW	KL		2
12	MP-RB-SW-08L-120418		10:18			1	2
13	MP-SW-EB-120418		11:05	↓		1	1
14	MP-RB-SED-08-120418		10:22	SED	↓		2
15	MP-RB-SED-03-120418		10:30		RF		2
16	MP-RB-SED-07-120418		12:30				2
17	MP-RB-SED-07 FD-120418		12:50				2
18	MP-RB-SED-04 MS/MD-120418		13:10			3	1
19	MP-RB-SED-05-120418		13:30			1	1
20	MP-RB-SED-06-120418	↓	13:50	↓	↓	1	1
Container Type							
P= Plastic A= Amber glass V= Vial G= Glass B= Bacteria cup C= Cube O= Other E= Encore D= BOD Bottle		Preservative		Container Type		P	
A= None B= HCl C= HNO ₃ D= H ₂ SO ₄ E= NaOH F= MeOH G= NaHSO ₄ H= Na ₂ S ₂ O ₃ I= Ascorbic Acid J= NH ₄ Cl K= Zn Acetate O= Other		Preservative		P		P G G P	
<u>DHJ</u> <u>MGJ</u>		Relinquished By:		Date/Time		Received By:	
<u>DHJ</u> <u>MGJ</u>		<u>12/5/18 11:00</u>		<u>MSL</u>		<u>APC</u>	
<u>DHJ</u> <u>MGJ</u>		<u>12/5/18 12:52</u>		<u>Chun Sebeau</u>		<u>12/5/18 16:00</u>	
All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.							
FORM NO: 01-01 (rev. 12-Mar-2012)							



CHAIN OF CUSTODY

PAGE 3 OF 3Date Rec'd in Lab: 12/05/18ALPHA Job #: 11849652

 8 Walkup Drive Westboro, MA 01581 Tel: 508-898-9220		Project Information		Report Information - Data Deliverables		Billing Information	
		Project Name: <u>MULLENEN PARK</u> Project Location: <u>ARLINGTON, MA</u>		<input checked="" type="checkbox"/> ADEEx <input checked="" type="checkbox"/> EMAIL		<input type="checkbox"/> Same as Client Info <input type="checkbox"/> PO #:	
Client Information				Regulatory Requirements & Project Information Requirements			
Client: <u>WOOD'S HOLE GROUP</u> Address: <u>107 WATERHOUSE RD.</u> <u>BOURNE, MA 02532</u> Phone: <u>508-540-8080</u> Email: <u>jfamily@whgrp.com</u>		Project #: <u>2017-0069</u> Project Manager: <u>JOE FAMELY</u> ALPHA Quote #:		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MA MCP Analytical Methods <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No CT RCP Analytical Methods <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Matrix Spike Required on this SDG? (Required for MCP Inorganics) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No GW1 Standards (Info Required for Metals & EPH with Targets) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NPDES RGP <input type="checkbox"/> Other State /Fed Program _____ Criteria _____			
Additional Project Information:		Turn-Around Time		ANALYSIS VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 524.2 SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15 EPH: <input type="checkbox"/> RCR45 <input checked="" type="checkbox"/> RCR48+ <input type="checkbox"/> PP13 VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only PCB: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only TPH: <input type="checkbox"/> PEST <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint TOC: <u>TOC</u> CRATIN: <u>CRATIN SIZE</u>			
<u>"RCRA 8+" = RCRA 8 + Cu + Fe + Mn + Zn</u> <u>BILL TO TOWN OF ARLINGTON (CONTACT VIA SUSAN CHAPNICK)</u>				SAMPLE INFO Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do			
ALPHA Lab ID (Lab Use Only)		Sample ID		Collection	Sample Matrix	Sampler Initials	Sample Comments
49652-21		MP-UW-SED-02-120418		<u>12/4/18</u>	<u>14:50</u>	<u>SED</u>	<u>8F</u>
				<u>1</u>		<u>1</u>	<u>1</u>
							<u>2</u>
Container Type		Preservative		Container Type	<u>G</u>	<u>G P</u>	
P= Plastic A= Amber glass V= Vial G= Glass B= Bacteria cup C= Cube O= Other E= Encore D= BOD Bottle		A= None B= HCl C= HNO ₃ D= H ₂ SO ₄ E= NaOH F= MeOH G= NaHSO ₄ H= Na ₂ S ₂ O ₃ I= Ascorbic Acid J= NH ₄ Cl K= Na Acetate O= Other		Preservative	<u>A</u>	<u>AA</u>	
Relinquished By:		Date/Time		Received By:		Date/Time	
<u>MSL</u>		<u>12/5/18 11:00</u>		<u>MSL At</u>		<u>12/5/18 11:00</u>	
		<u>12/4/18 12:52</u>		<u>Over 9 clean</u>		<u>12/5/18 12:52</u>	
All samples submitted are subject to Alpha's Terms and Conditions. See reverse side. FORM NO: 01-01 (rev. 12-Mar-2012)							